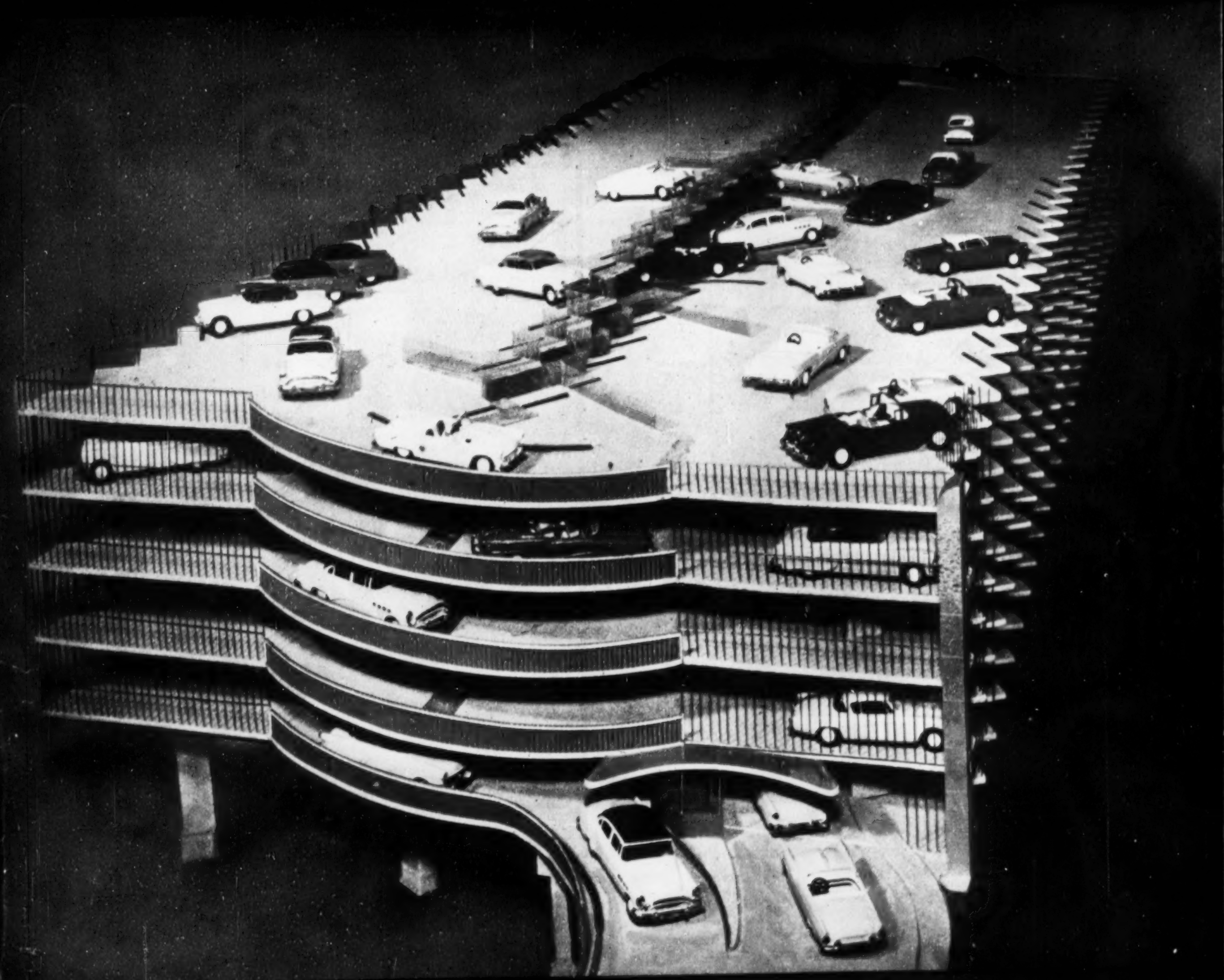
ENGINEERING NEWS-RECORD



A McGRAW-HILL PUBLICATION

E B POWER GS N
UNIVERSITY MICROFILMS IN
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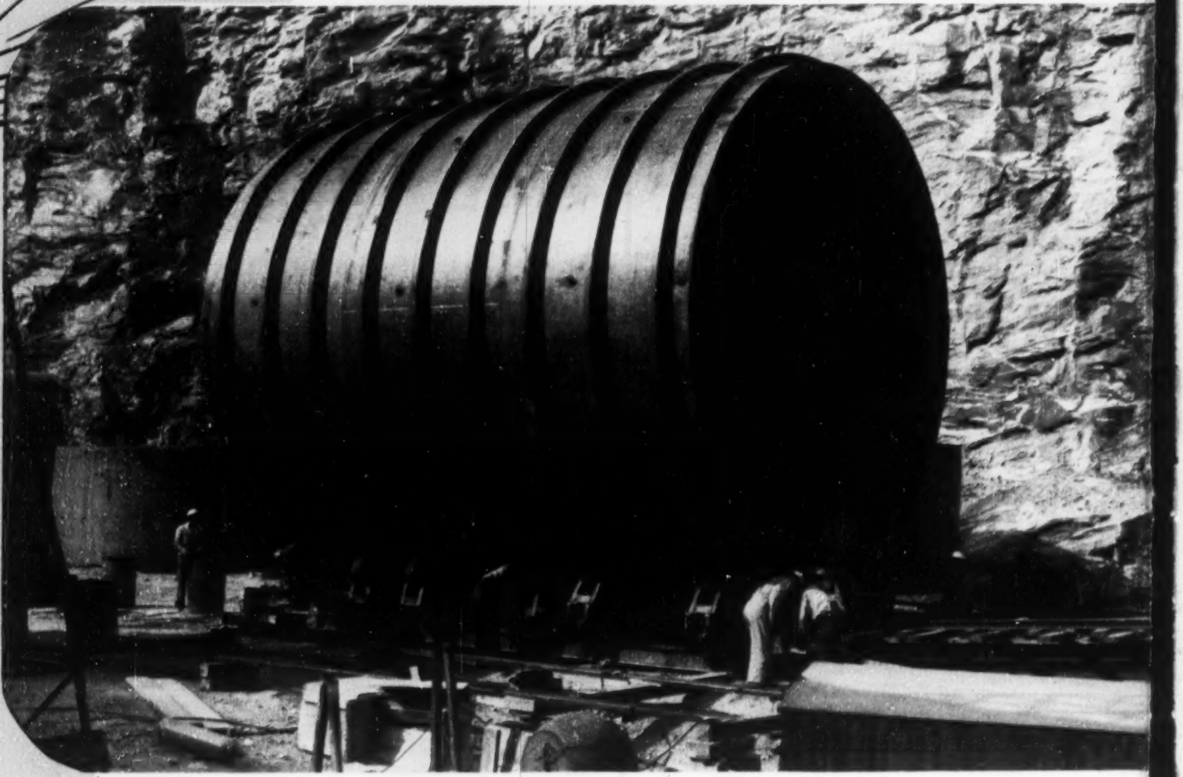
CB&I

PENSTOCKS
for a multiple purpose development



Buford Dam, under construction on the Chattahoochee River thirty-five miles northeast of Atlanta, Ga., will store 1,250,000 acre-ft. of water for flood control, navigation and for producing 86,000 kw of hydro power. To meet the penstock requirements of this multiple purpose development CB&I supplied three penstock linings, two 22-ft. diam. by 216-ft. long and one 10- ft. diam. by 122-ft. long. CB&I has been called upon to solve many complicated and unusual steel plate problems in the last 64 years. Write our nearest office and make use of this experience when you plan penstocks or other welded steel plate structures.

CHICAGO BRIDGE & IRON COMPANY

Atlanta, 3 .... 2125 Healey Building
Birmingham, 1 .... 1520 North 50th Street
Boston, 10 .... 1012-201 Devonshire Street
Chicago, 4 .... 2101 McCormick Building
Cleveland, 15 .... 2201 Midland Building
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Pittsburgh, 19 .... 3212 Alcoa Building
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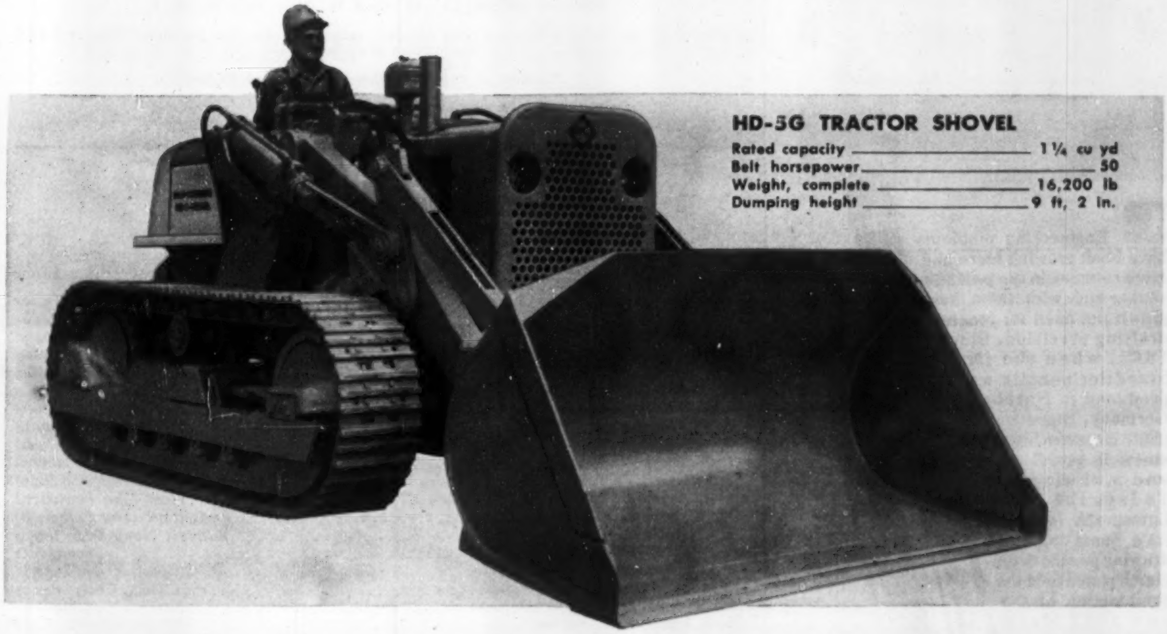
Plants in BIRMINGHAM, CHICAGO, SALT LAKE CITY and GREENVILLE, PA.

In Canada: HORTON STEEL WORKS LIMITED, FORT ERIE, ONT.

Pace-Setting HD-5G Tractor Shovel

NOW BETTER 3 WAYS



HD-5G TRACTOR SHOVEL

Rated capacity	1¼ cu yd
Belt horsepower	50
Weight, complete	16,200 lb
Dumping height	9 ft, 2 in.

From the time of its introduction seven years ago, the Allis-Chalmers HD-5G Tractor Shovel has been tops in popularity. Many thousands are daily proving their ability and versatility on all kinds of material handling and excavating jobs.

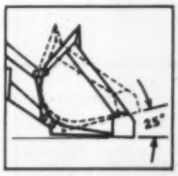
Now, design refinements make the HD-5G a three-way better value than ever before:

1. Has Bigger Rated Capacity

New bucket handles a big 1¼-yd load — streamlined design now helps roll in large loads with less tractor effort. The back of the bucket has been brought forward and the sides extended to cut spillage, put more payload where it's wanted.

2. Helps the Operator Do More

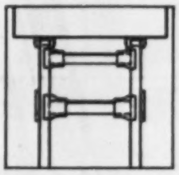
Cleaner dumping with the new bucket saves the operator time and effort shaking out loads.



For added versatility, there is a two-position bucket available with both standard automatic return to digging position and operator-controlled tip-back. If the operator chooses to use the controlled tip-back, he can load the bucket, then tip it back approximately 25° before raising, assuring maximum output under special conditions such as downhill loading or loading loose materials.

The HD-5G helps the operator do more in other ways, too — giving him full vision, fast and easy control, cleaner platform and more comfortable seat from which to work, and more working time with truck wheels, support rollers and idlers that need greasing only once every 1,000 hours.

3. Works at Lower Cost



The HD-5G now works at even lower cost than ever before — not just because it *does more*, but because it has features that mean *less maintenance, longer life.* For instance, new type tubular bracing on the bucket booms provides added strength and support, keeps the bucket in line. The floor at the rear of the new bucket has been raised seven degrees to reduce wear on the bottom sheet. Heavy-duty truck wheels and idlers are available for particularly tough working conditions. One-piece, full-length main frame permits unit construction so that major assemblies can be removed without disturbing adjacent units, putting tractor back on the job in hours rather than days.

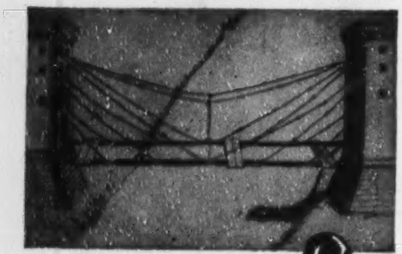
Ten Quick-Change Attachments Add to HD-5G Versatility

Bulldozer
Angledozer
Narrow Bucket
Rock Bucket
Crane Hook
Light Material Bucket
Trench Hoe
Lift Fork
Tine Fork
Rock Fork
— also rear-mounted Ripper

See your Allis-Chalmers dealer for more about these and other production-boosting features of the popular HD-5G Tractor Shovel.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Verantius' Pons Ferreus
A SUSPENSION BRIDGE DESIGN
early seventeenth century



2H
2886 J.S. STAEDTLER, INC. MARS LUMOGRAPH
2H
1001 J.S. STAEDTLER MARS-LUMOGRAPH TECHNICO

Engineering problems have been growing more and more complex in the past 300 years, and with them has grown the need for greater drafting precision. Since 1662, when the first Staedtler pencils were produced in Nurnberg, Germany, Staedtler has made constant improvements in pencil design and manufacture. Today, the Mars-Lumograph is America's finest imported drawing pencil; in the clutch pencil field the combination of the new 1001 Mars Technico push-button lead holder and 1904 Mars-Lumograph imported drawing leads insures your having the very best.

The 2886 Mars-Lumograph drawing pencil gives you precise thickness and the blackness of line needed for crisper, cleaner prints. Perfectly graded in 19 degrees, EXEXB to 9H. $1.50 per dozen—less in quantity.

The 1001 Technico Mars-Lumograph push-button lead holder costs no more than ordinary holders, has a noiseless, smooth-working, low-friction clutch mechanism, lightweight wood construction with perfect balance and, built into the push-button cap, a unique lead sharpener. $1.50 each—less in quantity.

1904 Mars-Lumograph Imported Drawing Leads are so opaque that inking-in is not necessary. Leads are ribbed for firm clutch grip and each has a removable cap which prevents sliding from holder. Available in 18 degrees, EXB to 9H. $1.20 per dozen—less in quantity.

J.S. STAEDTLER, INC.
27 DICAROLIS COURT
HACKENSACK, NEW JERSEY

ENGINEERING NEWS-RECORD

ABP Member ABC

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Robert F. Boger
Publisher

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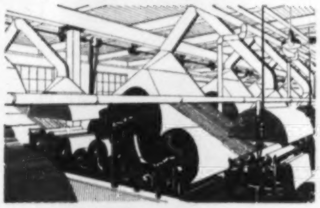
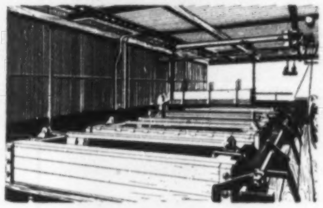
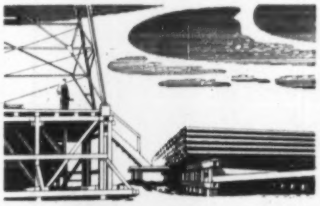
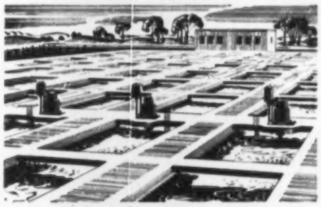
*Wolmanized
LUMBER
stresses application versatility
...among these four outstanding benefits









1 Application versatility. Wolmanized clean pressure-treated lumber is an improvement on nature. Having all the versatility and user acceptance that is traditional of wood, Wolmanized lumber goes even farther. It is many times longer lasting than untreated lumber, while being deadly to rot and termites. Wolmanized lumber is the treated lumber that is "pedigreed" with actual documented Service Records. These records not only authenticate more than a quarter century of service but list literally hundreds of applications. Wherever you may have use for treated lumber, Wolmanized clean pressure-treated lumber will meet, and will probably exceed, your requirements. Application versatility of Wolmanized lumber is heightened by important added benefits, too. Besides being clean, it is also odorless, completely paintable, harmless to skin and clothing, and noncorrosive to metal fittings.

2 Available anywhere. There are many kinds of treated lumber, but 48% of *all* clean pressure-treated lumber is "Wolmanized" brand. This means that nearly as much of it is specified and used as is the combined total of all other kinds. Distribution as well as quality earns such acceptance. 24 qualified wood preserving plants in the United States and Canada provide coast-to-coast distribution, assure certain delivery.

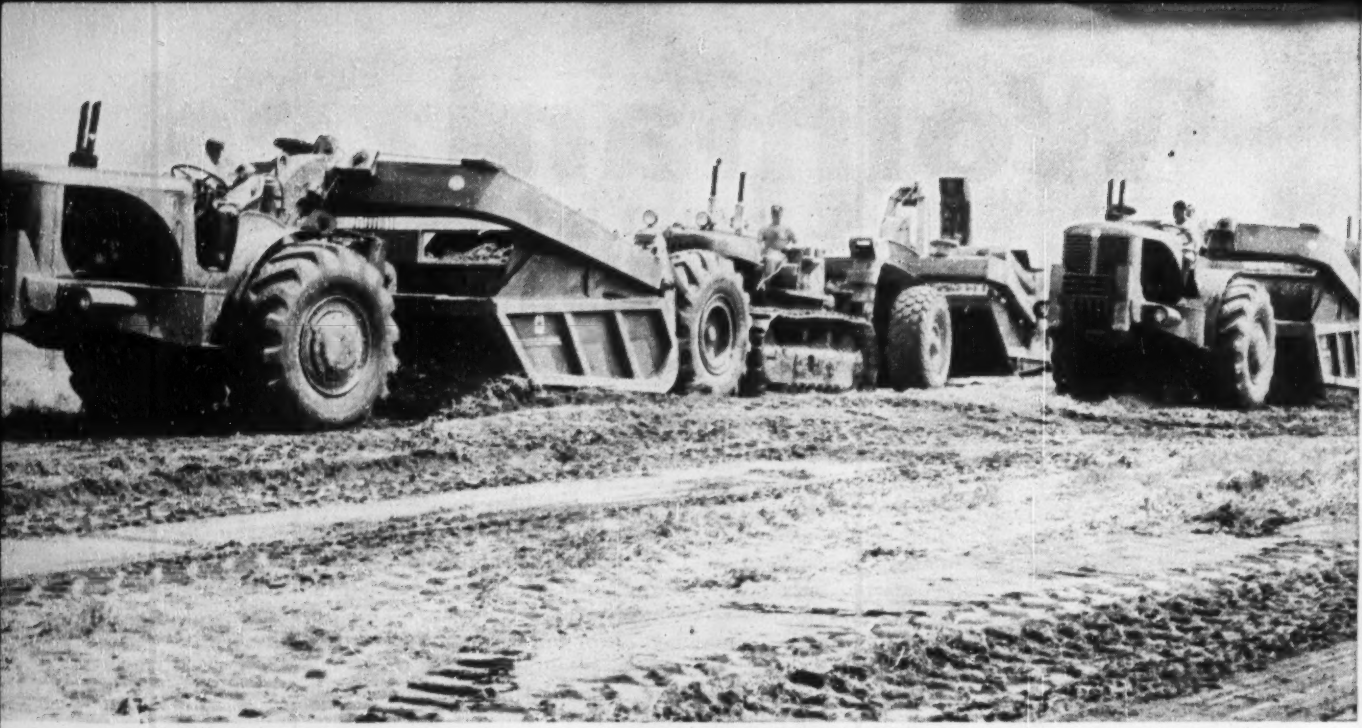
3 Uniform treatment. Wherever you buy Wolmanized clean pressure-treated lumber you can be sure that uniform treatment is providing a product of undeviating high quality. The Wolman brand salts are produced under a single exact formula. High pressure treatment processes by which Wolman preservative, in solution, is driven deep into wood fibers must also meet rigid Koppers requirements.

Only properly equipped, responsible wood preserving organizations can qualify for licenses to produce under the "Wolmanized" brand.

4 Proved dependability. The Service Records that demonstrate Wolmanized lumber's application versatility also prove its dependability. Actual case histories of how Wolmanized lumber has served others, and how it can fill your needs have been compiled into an informative brochure. For full information write: Koppers Company, Inc., Wolman Preservative Department, Pittsburgh 19, Pennsylvania.

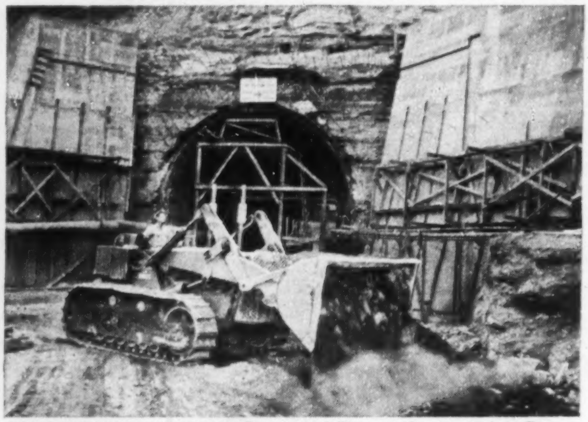
*"Wolman" and "Wolmanized" are registered trademarks of Koppers Company, Inc.

Pressure-Treated
Wolmanized
LUMBER



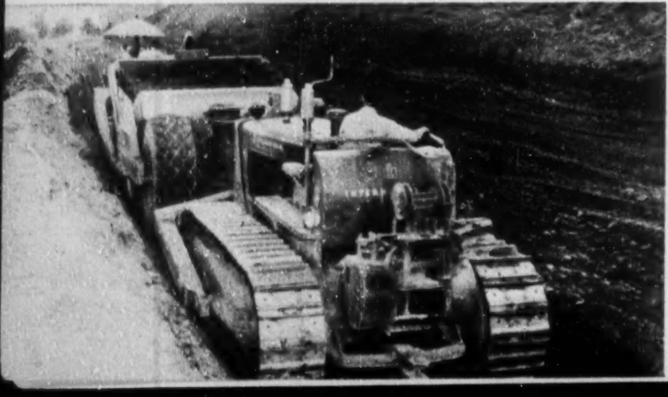
OHIO TURNPIKE. Max Julian, Angola, Indiana, holder of a 1,000,000-cubic yard earthmoving sub-contract, rates INTERNATIONALS this way: "*My TD-24 powered scrapers can't be beat for production and my 2T-75 high-speed earthmovers are faster, sturdier and haul more weighed yards per trip than any others with the same capacity.*"

MAINE TURNPIKE EXTENSION. DeMatteo Construction Co., Quincy, Mass., team these three INTERNATIONAL Model 2T-75s with 8 TD-24s with dozers and scrapers to move 1,250,000 cu. yds. of borrow on 9.145-mile Turnpike contract.



WEST VIRGINIA TURNPIKE. Bates and Rogers Construction Corp., Chicago, find the INTERNATIONAL TD-18A crawler and 3 cu. yd. INTERNATIONAL DROTT Skid-Shovel a great all-around performer in constructing ½-mile tunnel between Standard and Fairfield, W. Va.

WEST VIRGINIA TURNPIKE, Morrison-Knudsen Co., Inc. and R. E. Mills Company, Cabin Creek, West Virginia, used INTERNATIONAL TD-24 to push-load scrapers on a 9-mile contract on the recently opened West Virginia Turnpike.



NEW HAMPSHIRE TURNPIKE. Leveling fill on the New Hampshire Turnpike is a fast moving job with an INTERNATIONAL TD-24 and bulldozer supplying the power. R. G. Watkins & Sons, Inc., Amesbury, Mass., equipment owner.

IH works on the Superhighways

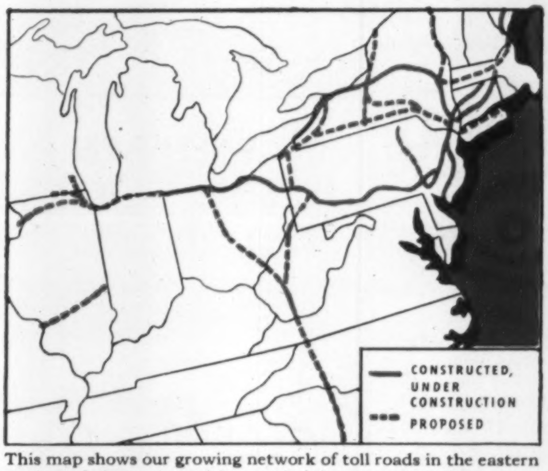
From pioneering to paving, INTERNATIONAL equipment speeds the nationwide superhighway projects with lower costs and greater contractor profit.

Contractors who build super roads buy INTERNATIONAL equipment for the same reason the general public snaps up Turnpike bonds—IH is a shrewd, safe investment netting top returns.

There's one common characteristic about all INTERNATIONAL earthmoving equipment—it is designed to move more paydirt for less money from start to finish on every job. Best thing is that these operating advantages are available to all contractors—fleet owners and owners of a single tractor, alike.

Call your INTERNATIONAL Industrial Power Distributor today for full details or an on-your-job demonstration of the IH equipment needed in your operations. You'll be money ahead this year and in the years to come. Besides, you can always depend on prompt, efficient service and genuine replacement parts for your INTERNATIONALS. Wherever your job may be, an INTERNATIONAL Industrial Power Distributor is nearby to serve you on the job, in his completely equipped shop.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS



This map shows our growing network of toll roads in the eastern section of the nation with completed projects and those under construction shown in solid lines, and proposed turnpikes appearing in dotted lines.

INTERNATIONAL HARVESTER

INTERNATIONAL

INDUSTRIAL POWER

MAKES EVERY LOAD A PAYLOAD

MAINE TURNPIKE EXTENSION. Here are five of the eight INTERNATIONAL TD-24s used by Nello L. Teer Company, Durham, North Carolina, shown loading out the fill on one of the firm's prime contracts totaling 13.48 miles on the Maine Turnpike Extension.

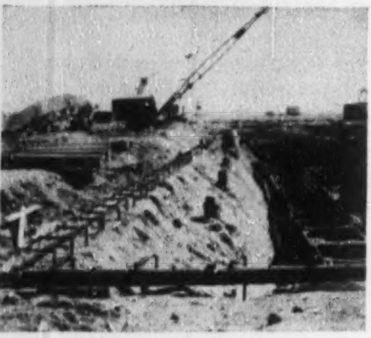
NEW YORK THRUWAY. D. W. Winkelman Company, Inc., Syracuse, N. Y., uses INTERNATIONAL TD-24 to pull elevating loader that keeps eight haul trucks rolling with 400 cubic yards of fill hourly on New York Thruway approach roads.

PENNSYLVANIA TURNPIKE EXTENSION. J. D. Morrissey, Inc., Philadelphia, uses seven INTERNATIONAL TD-24s, two INTERNATIONAL TD-18As on $5,385,313 prime contract for 7½ miles of the Delaware River extension of the Pennsylvania Turnpike.

HOW TO HANDLE
WET JOBS

INTERCEPTING
SEWER
Staten Island, N. Y.

Contractor: Nicholas DiMenna & Sons



PUMP 20 MILLION GALS PER DAY
TO KEEP SUBGRADE DRY

THE CENTER-LINE of this excavation was less than 300 ft from the Atlantic Ocean, which fairly flooded through the highly pervious sand.

• The problem was to lower 28 ft of groundwater in a 30-ft cut for a new concrete intercepting sewer—to do this on a site where contractors could recall previous experience of tough water-fighting at an excavation depth of only 16 ft, even with aid of wellpoints. Thus, the outlook was not exactly rose-colored.

• Yet the plan of the Griffin engineers and the efficiency of their pumps and wellpoints gave a sure, speedy solution. The truly enormous volume of 20 *million* gals per day was pumped under perfect control, keeping subgrade bone-dry and permitting economical open cut, except where sheeting was required (see photo) to protect existing sewers and structures.

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

READER COMMENT

That Long, Long Trailer

SIR: We noticed in ENR November 11, p. 93 a misprint in the length given for our self-unloading cement transport. It should read "Lengths up to 37 ft. . ." and not 378 ft as stated.

We thought we had better call this to your attention immediately because we are already receiving inquiries for information on a 378-ft transport.

M. J. KROUPA
Sales Dept.
Highway Equipment Co., Inc.
Cedar Rapids, Iowa

[EDITOR'S NOTE—Might be okay on the straightaway but those curves!]

Longest Sea Loading Line?

SIR: Your article "Giant Loading Line Goes Down to Sea" appearing in the Engineering News-Record of November 11, 1954, was a very interesting discussion of the launching procedure for a subline. The claim to the longest sea loading line, however, may be inaccurate.

In December of 1953, a line was launched by the American Independent Oil Company from their oil terminal in Kuwait, into the Persian Gulf. This line was a 16″ line, 11,981 ft. long. Contractor on this work was the Construction and Trading Company of Beirut. Carroll E. Bradberry and Associates, Consulting Engineers of Los Altos, California were the engineers.

Although the American Independent line may not be the longest line, it appears to be somewhat longer than the one described in your article.

CARROLL E. BRADBURY
Consulting Engineer
Los Altos, Calif.

The Future for Airports

SIR: It is obvious from the article, "What's New in Airport Terminal Building," (ENR Nov. 18, p. 34) that airport buildings serving a large volume at great metropolises are not being planned satisfactorily.

In carrying capacity, a large plane is similar to one railroad car, the difference being the greater space requirements of planes because of the wings and space required for maneuvering. . . . With five levels, 15,000 railway cars, each equivalent to one plane, could be loaded and unloaded within walking distance of a central terminal. Now if one were to try to load and unload 15,000 airplanes of the present size at a terminal, the wings and maneuvering space, and the necessity of having the planes all on one level, would cover an area so great that it would be far beyond walking distance.

In the future, even if much larger planes are used, it might be daily routine to have 200 planes at a time loading and unloading at an airport in many large cities at peak hours. It is obvious, that with planes of 500-passenger capacity, with huge wings, 200 planes could not be docked around a central terminal, unless some method of ground transportation is used from plane to terminal. . . .

In such a tremendous metropolis like New York, the easiest way to solve the problem is to have each large airline with its own building and facilities separate from the others, with an interairport transportation system between various airline terminal buildings. . . .

FRANKLIN E. GROSS
Transportation Consultant
New York, N. Y.

CALENDAR

Engineering Section, American Association for the Advancement of Science, Dec. 27-30, also the **Fourth Conference on Scientific Manpower,** Dec. 28-29, both at the University of California, Berkeley, Calif.

American Road Builders' Association, convention, Roosevelt Hotel, New Orleans, Jan. 10-13.

National Association of Home Builders, convention, Conrad Hilton Hotel, Chicago, Jan. 16-20.

Engineers Joint Council, general assembly, Hotel Statler, New York City, Jan. 21.

Associated Equipment Distributors, annual meeting, Conrad Hilton Hotel, Chicago, Jan. 23-27.

Mason Contractors Association of America, annual convention, Jefferson Hotel, St. Louis, Jan. 30-Feb. 2.

National Society of Professional Engineers, spring meeting, Hotel Charlotte, Charlotte, N. C., Feb. 18-19.

Annual Highway Engineering Conference of the University of Colorado, Boulder, Feb. 24-25.

Concrete Contractor's Association of Greater Chicago, Mid-West Concrete Exposition, Navy Pier, Chicago, Feb. 24-26.

National Association of Corrosion Engineers, annual conference, Palmer House, Chicago, March 7-11.

You Can Cut Sewerage and Drainage Costs

3 Ways....

Specify TYLOX

Flexible Rubber PIPE JOINTS

ON INSTALLATION . . .

Construction men make *thriftier* bids on TYLOX-Jointed pipe projects, because they can count on the pipe going down *faster*. There's no "fussy" mortaring, calking or collaring to run up costly man hours. Three simple steps (shown in the sketches below) are all it takes to make TYLOX pipe joints. And Tylox eliminates costly delays normally taken for granted on a pipe job . . . For instance, Tylox may be properly installed in wet trenches, and all finished line may be backfilled immediately.

ON MAINTENANCE . . .

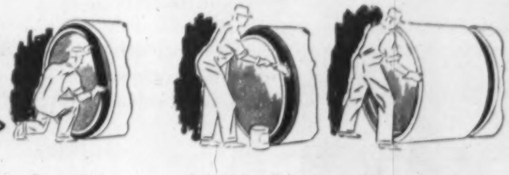
Tylox Joints relieve sewerage and drainage budgets of excessive maintenance burden . . . non-deteriorating and non-crumbling Tylox doesn't have to be "dug up" for repairs. Tylox Joints are made of a specially compounded rubber which resists sewage and industrial waste acids, and is virtually ageless. Once installed, they outlast the pipe itself.

ON SEWAGE TREATMENT

Tylox Joints completely defeat infiltration at pipe joints, saving substantially on the cost of operating sewage treatment plants. Tylox seals by compression, not adhesion. When the pipe is shoved home, *flexible* Tylox packs the joint's annular space tight by mechanical action, and the natural resilience of the rubber *keeps* it tight, preventing infiltration or root penetration for "the life of the line."

Take advantage of these Tylox features to cut costs 3 ways when planning your sewerage and drainage installations. Specify TYLOX RUBBER JOINTS.

Making Joints with
TYLOX
RUBBER
GASKETS
is as simple as
A B C



Cement tongue and snap on TYLOX gasket.

Lubricate sliding surfaces with TYLOX cement.

Shove the pipe home to line and grade.

Write today for complete specification data and literature on TYLOX Pipe Jointing Gaskets.

1824

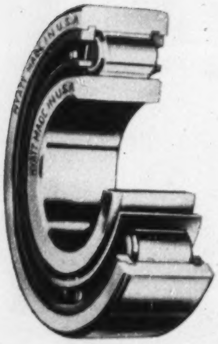
HAMILTON KENT
MANUFACTURING COMPANY
225 Gougler Ave. KENT, OHIO Tel. 3449

HEAVY-DUTY BEARINGS... for a heavy-duty crusher

J. C. Steele and Sons, who build this rugged Model 14A Shale Crusher, want the best bearings money can buy at the critical points—the roll shafts which bear the brunt of the entire crushing load.

So the fixed roll shaft and the sprung roll shaft are each equipped with a pair of Type A-TS HYATT Hy-Load bearings. Their solid, precision-built cylindrical rollers provide maximum capacity for the punishing radial loads the roll shafts must continually absorb.

Like so many other quality machinery builders, Steele makes *sure* of trouble-free service by specifying HYATTS!



The Hyatt A-TS Bearing is one of five basic Hy-Load types featuring a separable inner race.

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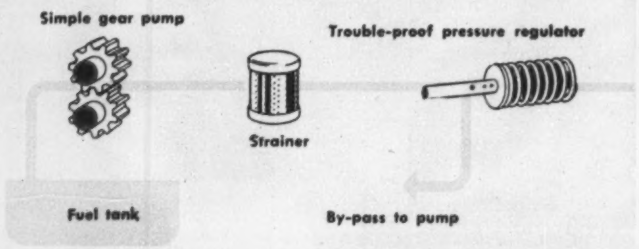
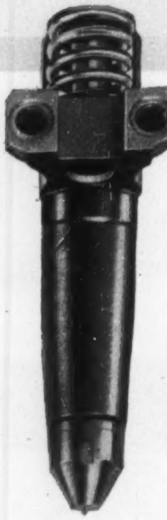
Here's the simplest diesel fuel system ever developed!

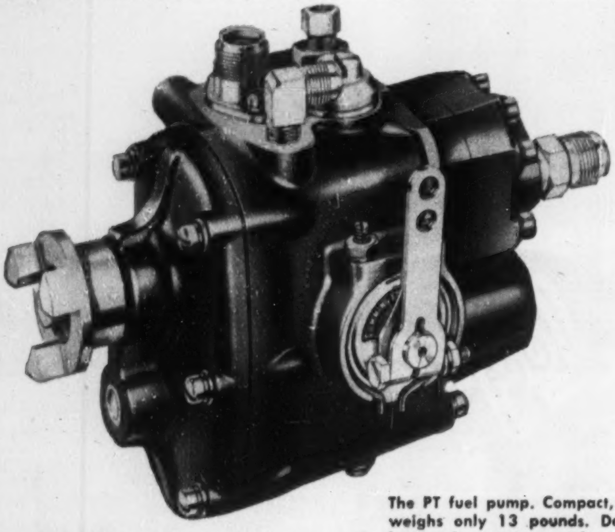
Simplest pump and fuel control arrangement



Cummins new PT fuel system...



The PT injector utilizes the exclusive Cummins principle of fuel injection which has set the highest standards of performance and economy for more than 20 years.



The PT fuel pump. Compact, easy to handle, weighs only 13 pounds. Does not have to be timed to engine, quick and easy to install.

THE revolutionary new PT fuel system, now standard on all Cummins Diesels, has fewer and far simpler parts than carburetor and ignition systems or ordinary diesel fuel systems. It is easy to understand, simple to work with, can be serviced by any mechanic. No longer any need for fuel system specialists! The PT fuel system has undergone two years of field testing and millions of operating miles under every conceivable condition. Its dependability record is phenomenal. Operators report even less fuel consumption than with earlier Cummins fuel systems and far less cost of maintenance. The PT fuel system can be installed on any Cummins Diesel built since 1932.

Cummins

leader in lightweight high speed diesel power

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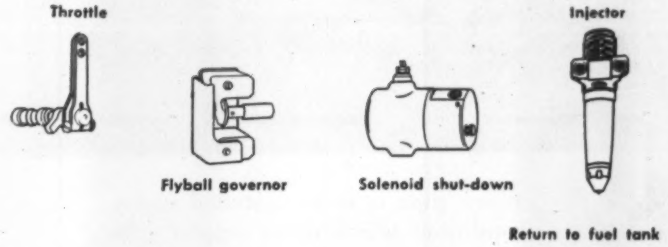


PT advantages over gasoline systems:

- No contact points to adjust
- No condenser to replace
- No spark coil to short
- No wiring harness to short
- No spark plugs
- No vapor-lock problems
- No flooding
- No choking or priming
- No needle valves to clog
- No butterfly valve
- No float level to maintain
- No float valve to stick

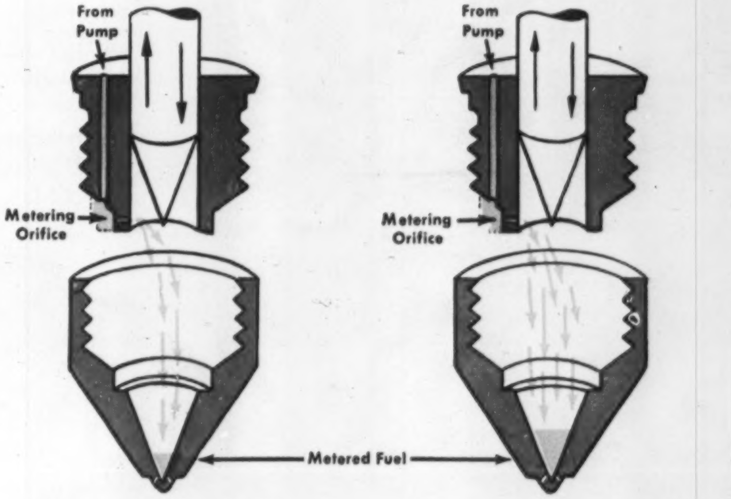
PT advantages over ordinary diesel systems:

- No fuel rack adjustments
- No check valves
- No needle valves
- No helixes
- No distributor discs
- No metering pumps
- No high-pressure fuel lines
- No fuel pump timing

. . . simpler to work with than gasoline carburetion and ignition

Simplest Fuel Metering Device

The principle is simply that the amount of fuel flowing through a fixed orifice varies according to the amount of pressure on the fuel. Pressure is controlled by the throttle on the PT pump. Fuel flow through orifice is cut off as injector plunger, actuated by engine camshaft, moves down to inject fuel.



When engine is under partial load, fuel pressure is low, and only a small amount of fuel passes through orifice into injector cup.

When engine is under full load, fuel pressure is increased, and greater amount of fuel passes through orifice into injector cup.

Mail this today, and get more PT facts!

CUMMINS ENGINE COMPANY, INC. Dept. ER-12
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Please send me free illustrated folder, "Cummins PT Fuel System."

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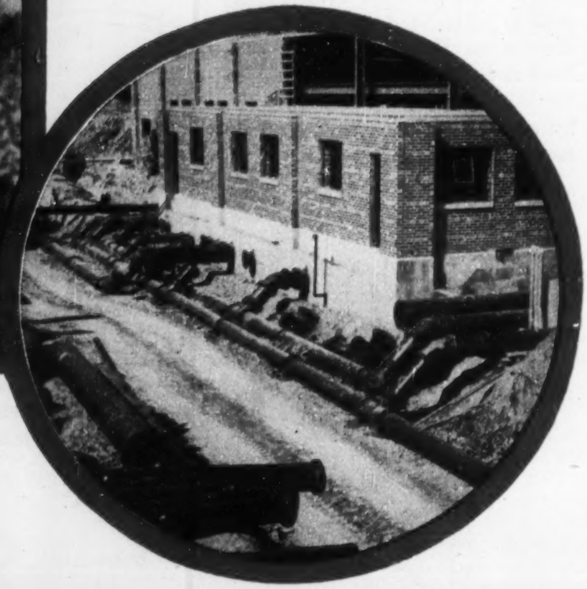
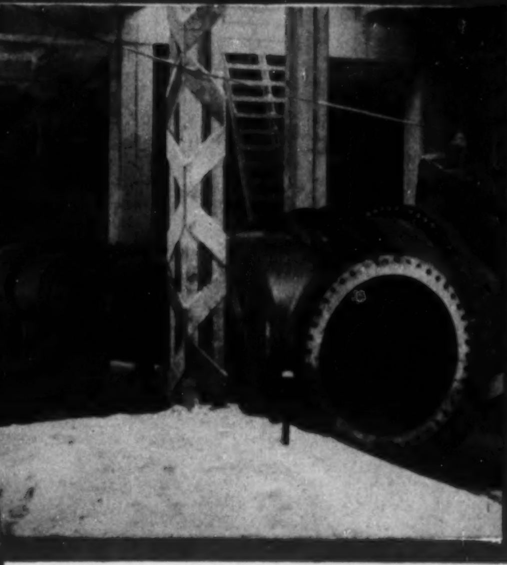


(above)
Installing cast iron belt feeder main for water supply system in Casper, Wyoming.

(right)
Cast iron pipe for discharge lines from water circulating pump house in a midwest oil refinery.

CAST IRON PIPE

use this RUGGED pipe



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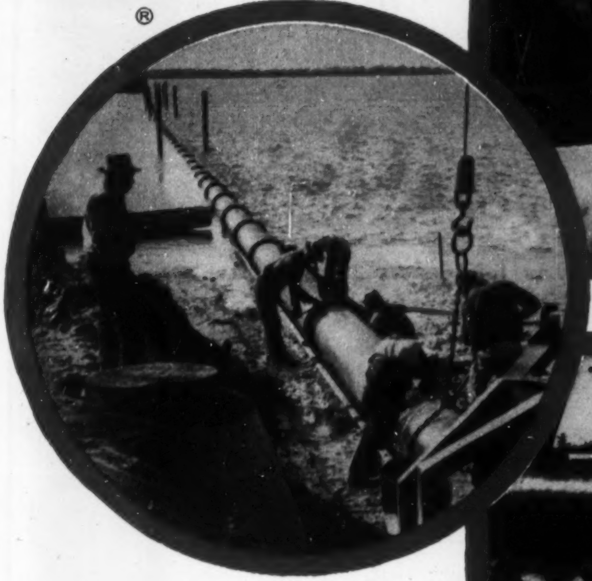
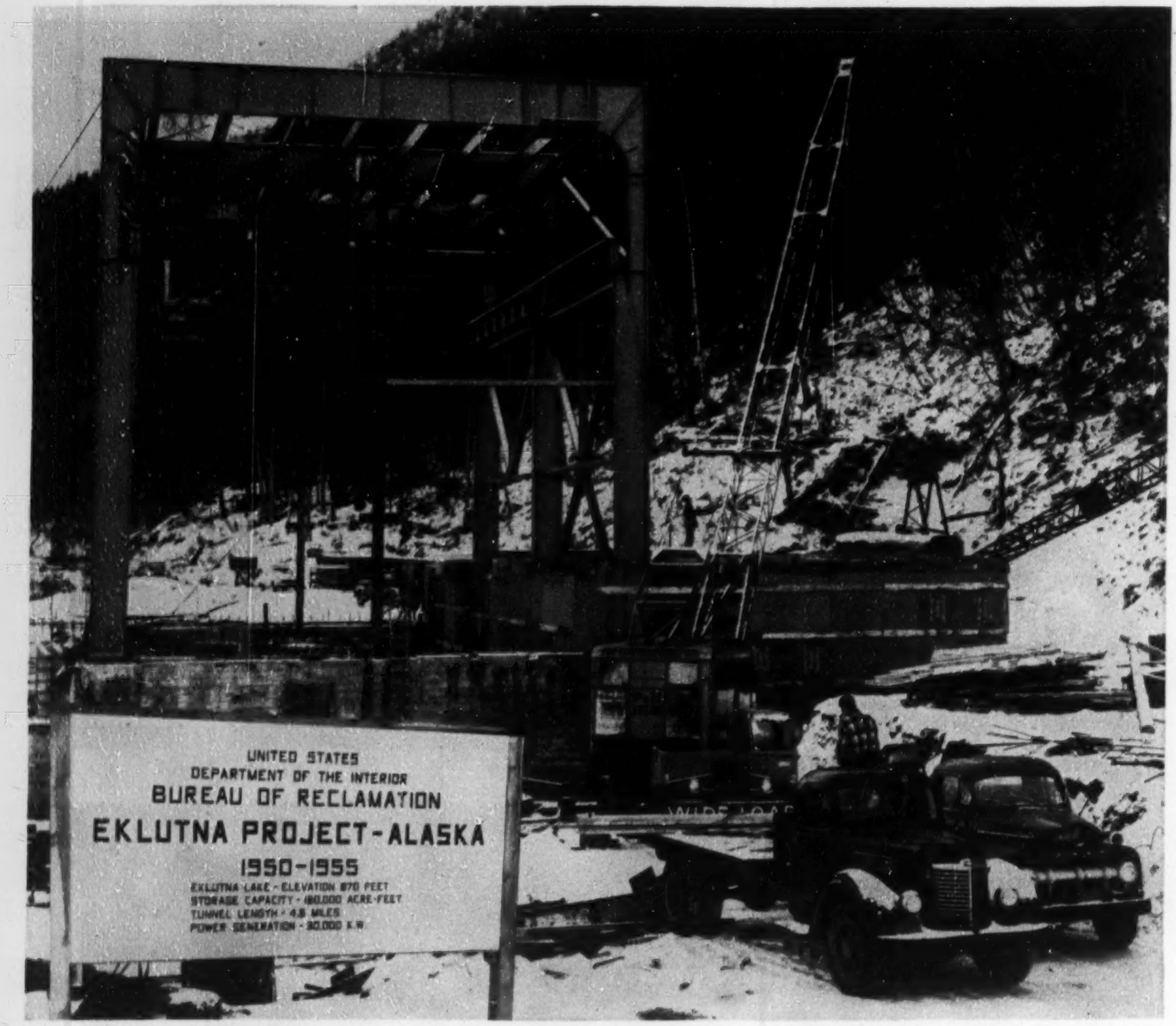


(above)
Cast iron pipe for outfall into St. Joseph Sound from sewage disposal plant at Dunedin, Fla.

(top right)
Cast iron pipe and fittings installed in world's largest water filtration plant in Chicago, Ill.

(at right)
Installing 30" cast iron pipe for sewage treatment plant at Panama City, Fla.

SERVES FOR CENTURIES . . .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DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
EKLUTNA PROJECT-ALASKA
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GE picks waterproof, fireproof FOAMGLAS to insulate Atomic Sphere

The G. E. Atomic Sphere is 26 times larger than any previously built. It has a surface area of 159,000 sq. ft. Inset photo shows how easily the lightweight FOAMGLAS blocks were handled by the workmen. This rigid insulation was more than strong enough to support their weight, yet easy for them to cut and shape.

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Why not discover how FOAMGLAS can benefit *you?* Send today for a sample and your choice of booklets describing the use of FOAMGLAS to insulate: 1) piping, tanks and other equipment; 2) cold storage space; or 3) normal temperature buildings. Write, indicating your specific interest.

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MODEL 400-W

7-to 9-cu. yd. capacity

Here's big news for men engaged in strip mining or heavy-duty construction work — Bucyrus-Erie has added another big-yardage, all-weather dragline to its world-famed "walker" line. You'll find unequalled money-making features in the new 400-W . . . here are some of them.

★**HREE POWER COMBINATIONS** — Your choice of heavy-duty diesel engine, electric power with independent motor-driven drums, and electric power with clutch-operated drums.

★**FICIENT FRONT END** — All-welded boom has T-section chord members with tubular bracing for maximum strength, minimum deadweight. Fast filling, clean carrying, quick dumping buckets help assure big output.

★**NG WORKING RANGE** — Without throwing bucket, material can be moved 405 feet with the 400-W's 200-ft. boom and 7-yd. bucket, 377 feet with the 185-ft. boom and 8-yd. bucket, and 351 feet with the 170-ft. boom and 9-yd. bucket. Digging depths range up to 135 feet.

★**PID OPERATING CYCLE** — Fast hoisting and lowering with powerful air-controlled clutches and brakes . . . rapid acceleration and deceleration of the swing under variable-voltage Ward Leonard control.

★**CEPTIONAL MANEUVERING ABILITY** — With exclusive Bucyrus-Erie walking mechanism, the 400-W walks where you want it, when you want it, in good weather or bad, even on ground that's too soft for other machines.

★**RONG RIGID BASE** — Provides 748 sq. ft. of bearing area for full stability in working and walking.

★**URDY MAIN MACHINERY** — Is simple in design . . . is arranged for accessibility in servicing and maintenance, and for maximum counterbalancing effect . . . is rigidly held in accurate alignment on deep-section revolving frame.

Complete information is yours for the asking — write today!

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South Milwaukee, Wisconsin

ENGINEERING NEWS-RECORD

Vol. 153, No. 24 December 9, 1954

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THE CONSTRUCTION WEEK

OUTLOOK GOOD—With predictions of perhaps a bigger year ahead (than 1954) contractors don't seem to have much to worry about, in the field of material supply, anyway.

A spot check of major supply centers across the U.S. by ENR's sources indicates: prices tend to be steady (though there's some fluctuation in lumber with demand); there's no across-the-board shortage of any materials, comparatively little spot shortage (insulation in Cleveland, cement in Detroit, steel sheet piling in Los Angeles).

REDEVELOPMENT PAYS—Pittsburgh's huge redevelopment program—which has and will continue to be big business for contractors—is also big business for the tax collector.

In 1955, assessed valuation of land and buildings in the city is set at $1.2 billion—up $13 million in one year, and up $152 million since the city started refurbishing itself in 1947.

RENEGE ON 'PIKE?—North Carolina's Turnpike Authority found itself in an embarrassing position over money in that discussion of a new turnpike to link the state with Virginia and West Virginia.

The authority had announced approval of a joint traffic survey by a private engineering firm, to cost a total of $96,000. But the North Carolina Highway Commission reminded the turnpike group that only $25,000 of highway funds are available for the survey from funds authorized by the legislature. (Highway Commission engineering forces are counted on to do much of the survey work.)

Said the commission to the authority put up the $7,000 more needed to pay our share.

WHO OWNS ST. LAWRENCE?—The action isn't expected to be a serious obstacle to development of St. Lawrence power—but that court suit filed by an Indian tribe certainly might be expensive.

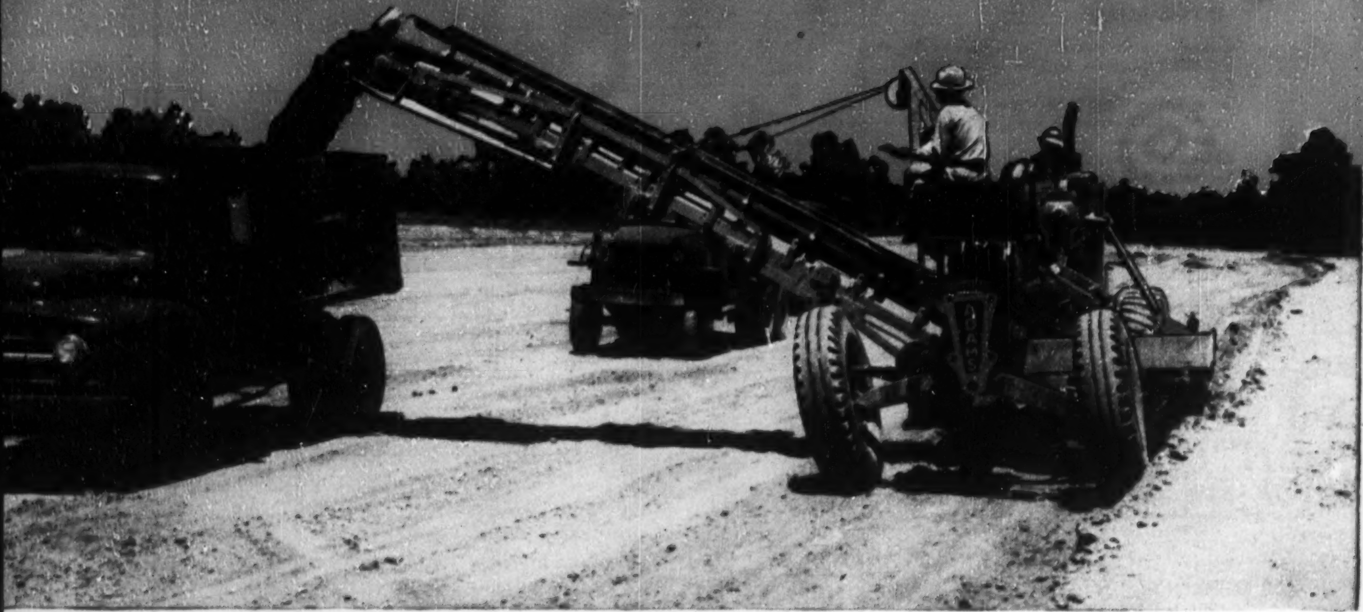
The St. Regis Indians, through attorneys, filed a suit claiming $34 million from the state of New York. The Indians claim that Barnhart Island—principal site for the power development—belongs to the tribe, along with the river bed and the power intrinsic in the water.

NOT ENOUGH PAY—Like many another public works official, Hawaii's Territorial Public Works Superintendent Ben Nutter is complaining that he can't pay enough to attract men to his engineering force.

His department, said Nutter, hasn't been able to obtain a single 1954 graduate from the University of Hawaii's engineering school. Reason is simple: best he can pay a beginner is $258 a month, while the men can get $300 or more on the mainland—and look to better increases later on.

ADAMS

Motor Grader with Elegrader



Plows and loads clay at rate of 10 yards per minute

The Adams Motor Grader-Elegrader combination pictured above is owned by a prominent contractor. It is shown here loading fill material out of a borrow pit. Cutting up to 24″ deep and 12″ wide, the outfit plows clay and loads trucks at the rate of 10 yards per minute.

On such jobs as loading, stripping, casting in new roads, terracing, etc., this great Adams combination is unsurpassed for economy of operation, ease of handling and dirt-moving ability. On jobs where it has no application, the Elegrader can be easily removed and blade put on for normal grading operations.

Let your local dealer show you how an Adams Motor Grader with Elegrader will step up production, cut costs and increase profits for you.

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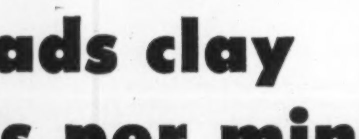
ADAMS

Motor Graders



TraveLoaders

Pull-Type Graders

WASHINGTON OBSERVER

Selling the President's highway program to various industry groups is getting under way. This week the American Petroleum Institute's board of directors' highway committee—which has been opposed in the past to gasoline taxes for highways—meets in Washington to get the Gen. Clay treatment. The Administration is hopeful it can turn the powerful API around.

Francis Du Pont is getting Administration lines straightened, too. He's pulling together from any and all interested government agencies their thoughts and prejudices so that an agreed program can go to the President, and thence to Congress, in January.

Clay's report will go to the President around mid-month. Count on it being primarily a $25-billion federal program for interstate system construction paid for out of bonds underwritten by the 2-cent federal gasoline tax. The remaining $25 billion will be an Administration hope—selling the states and cities on picking up that part, themselves.

•

Incidentally, Democrats are piqued at state highway officials for ignoring them at the association's Seattle meeting. Democrats had won the election on Nov. 2, but the AASHO invited only Republican congressmen to their meeting. It's more a social faux pas than anything serious, but it might be significant once the Democrats take over next January.

•

AFL building trades now have a kitty to fight John L. Lewis. The mine workers' United Construction Workers have been trying to move in on construction jobs, so far mostly in Pennsylvania. Now four AFL unions—teamsters, laborers, operating engineers and carpenters—have kicked in $15,000 each to drive UCW out of heavy construction and roadbuilding jobs.

The idea is to offer contractors a "package deal" with a promise that there will be no jurisdictional troubles for those who sign up. Also, the unions will make wage concessions if the situation demands.

UCW has been making inroads by having no jurisdictional problems and being able to offer better wage deals than AFL normally can.

•

Watch for the President to come out strong for an increase in the minimum wage. Labor Secretary Mitchell has been pushing to have the minimum fixed at, 85 or 90 cents. Present 75-cent floor was effective in January 1950.

An increase would be felt by everyone—including construction. Reason is that a higher floor tends to push up wage rates in order to maintain traditional wage spreads between different skills and jobs.

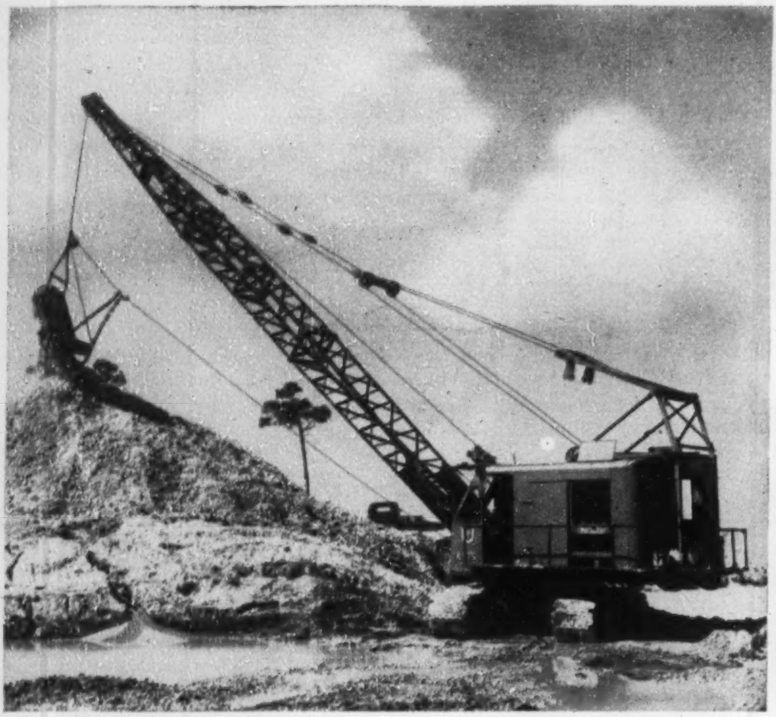
•

Urban redevelopment by cities has been upheld again in the Supreme Court (ENR Dec. 2, p. 23). The court followed up its District of Columbia decision of last week with another. It refused to hear a case brought by San Francisco property owners trying to invalidate the California community development law. San Francisco plans to condemn vacant land, and sell it for construction of quality housing.

•

An inventory of state and local public works available for putting into action is about completed. Gen. J. S. Bragdon, the co-ordinator of public works planning for the Council of Economic Advisers, told the mayors' conference he expects some 6,000 to 8,000 items in the canvas, being conducted by the Bureau of the Census.

MORE CYCLES PER DAY



AS A 1¾-YARD DRAGLINE. This fast swinging K-375 rig digs coral rock and sand in Florida. Speed-o-Matic control makes dig-swing-dump one fluid motion because operator has perfect "feel" of the load. There are no grabby clutches that produce lag and lost motion.

AS DEEP-DIGGING TRENCH HOE. This K-360 with 1¾-yard hoe makes full use of its 142 net hp, a natural for those deep, tough sewer jobs.

AS A HEAVY-DUTY 1¾-YARD SHOVEL. High strength components—precision machined—assure profitable, trouble free performance.

K-300 series shovel-cranes with Speed-o-Matic control, 142 net hp, plus greater "live weight" can boost your output up to 25%

It's not only how much per bucket—but *how many* buckets per day that piles up profits for shovel-crane owners. Smooth, instantaneous response of Speed-o-Matic power hydraulic control means faster, more productive cycles. Gives operator positive control for pinpoint accuracy and maximum safety. Cuts end-of-day fatigue too!

The 142 usable net hp gives you more digging or lifting power. And it has the built-in stamina and "live weight" necessary to produce under continuous use of this extra horsepower.

Equally important, with full convertibility you have maximum use of your K-300 rigs for hundreds of 1¾-yard jobs. Ask your distributor, or write for K-300 series literature now.

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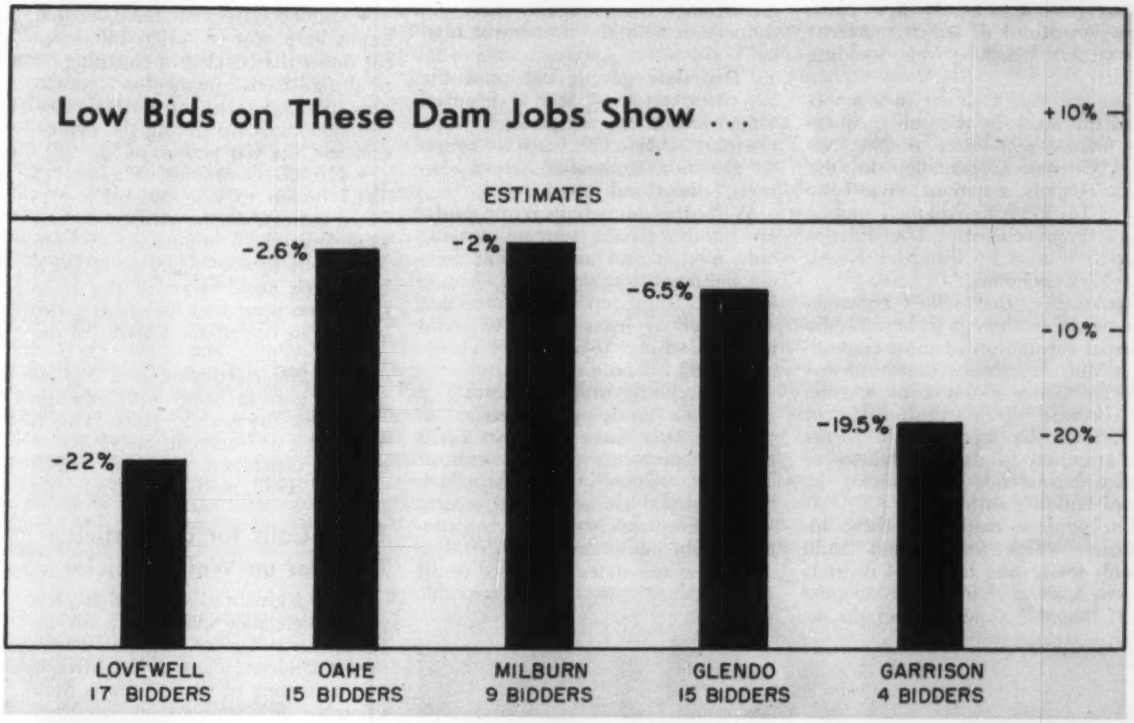


Competition in Heavy Construction Is Tough

Keen competition in bidding on federal dam jobs—and for many other public works contracts—is cutting the cost of these projects well below estimates. And it is encouraging government officials to get as many contracts out for bids as their budgets allow.

On nine recent water resources contracts, low bids totaled $52.5 million instead of the nearly $62 million the estimators had figured. This gave the Army Engineers and the Bureau of Reclamation more than $9 million extra to spend for other work on the same projects.

On five jobs (chart above) on which bids were opened or contracts awarded within the last month or so the low bids were below estimate in every case—sometimes far below what government experts had figured the cost of the job would be.

Part of the reason for this situation is the fact that there have been fewer new starts in big federal water resource development projects. But the stabilizing of construction costs and improvement of contractor operations on the job also are responsible for the below-estimate bidding.

Although the record is most striking in bidding on federal dam jobs, the same situation also applied to other heavy construction work. For example, the Indiana Toll Road Commission has announced that construction contracts for the 156-mi East-West Turnpike are 26.5% below estimates.

About 60% of the contracts for the turnpike have been let. If the bidding is proportionately low on remaining contracts, the total savings on the job—originally estimated at $176 million—will amount to $35 million.

• But costs are up—This competition for jobs, combined with the fact that materials and labor costs are rising, has put the squeeze on the profits of many contractors.

The ENR Construction Cost Index in December was at a record high of 643.31 (1913 base year was 100) in December—a rise of 5.2% in the wage rates and materials prices contractors paid during the last 12 months. This compares with an increase in the same costs of 4% during 1953 (page 108).

But, while bids are running below estimates—they averaged 10% to 15% below in the first half of this year—there are indications that the spread is beginning to narrow. Bids on highway construction in California and Colorado during the third quarter of this year climbed almost 10% above second quarter levels and brought to an abrupt halt the rather sharp downtrend which carried through the first half of the year.

Some firming of bid prices also is evident in the Bureau of Public Roads Composite Mile Index for federal-aid highway work. This index continued to decline in the third quarter. But it was a very slight dip.

The outlook for 1955 is for bidding on heavy construction jobs considerably closer to engineering estimates. Indications are that most contractors have about reached the limit in trimming those costs which they can control. But competition for jobs is likely to continue to be keen.

950,000 Classrooms Needed in 10 Years

Citizens Commission report indicates authority-financing may be necessary to handle $32-billion contruction needs

School construction totaling $32 billion is required over the next decade to provide 950,000 new classrooms—one-third of which represent the current backlog of building needs.

This goal has been set in a report issued this week by the public education finance committee of the National Citizens Commission for the Public Schools, a national civic body formed in 1949 to stimulate public school improvements. The finance group is headed by Beardsley Ruml, New York economist.

Recognizing that school construction needs are now way beyond the financial capabilities of most communities due to already over-burdened property tax as a source of revenue and because of constitutional debt limitations, the report draws particular attention to the possibilities of greater dependence on financing by school building authorities.

The point is made that these authorities—which finance and build schools for leasing to school districts—have a better chance of developing credit ratings that will attract the ordinary investor of municipal bonds than the thousands of local government units that normally have no connection with the investment market.

"The state governments and the big cities can tap pools of financial capital which are adequate; but the situation is different when it comes to the 60,000 smaller school districts," the Ruml report noted.

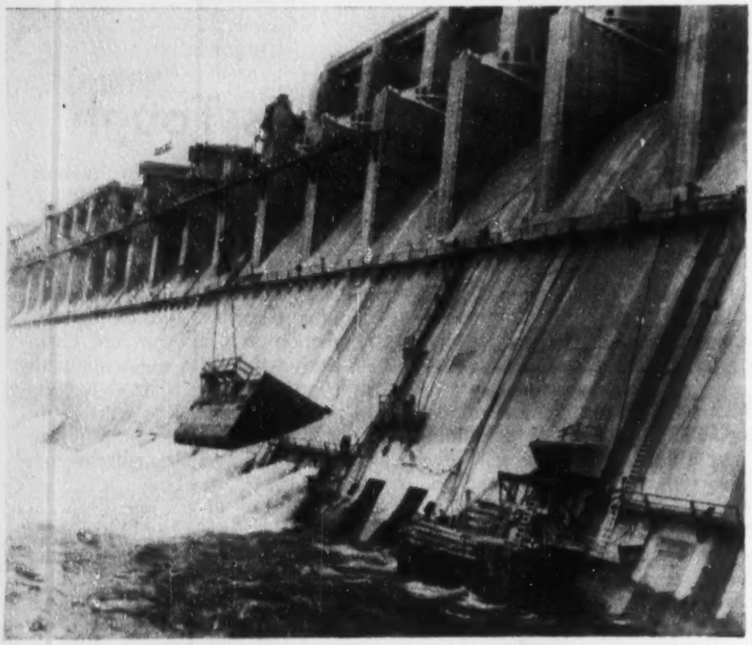
With the annual operating budgets of the school systems carrying only interest and amortization costs on buildings leased by the authorities, the Ruml report estimates that all the schools needed by 1965 could be built with a total budget charge of only $2 billion a year.

The report, while presenting a strong case for resort to special authorities, also listed objections raised by the opponents of this form of financing. Among objections which the report said had been raised, are:

- Authorities circumvent constitutional debt limitations.
- Cities and states with good credit ratings can borrow at more favorable rates.
- Poorer school districts may be unable to afford the rent on the buildings constructed by the authorities.

Using U. S. Office of Education school facilities survey figures and cost factors (ENR Feb. 11, p. 27), the Ruml report breaks down the 10-year, $32-billion, 950,000 classroom requirements program as follows:

- 312,000 classrooms for 8,900,000 pupils at a cost of $10.6 billion to cut down the backlog of construction resulting from population growth plus postponement of normal construction programs during the depression and the war period.
- 420,000 classrooms at a cost of $14.3 billion to take care of a projected increase in the elementary and secondary school population of from 36,000,000 to 48,000,000 up to 1965. (Assuming same ratios of pupils to rooms and same cost factors as calculated in surveys of the Office of Education.)
- 220,000 classrooms at a cost of $7.5 billion to cope with obsolescence over the next 10 years. This is based on a replacement rate of 2% of existing classrooms per year (ENR April 17, 1952, p. 101).



Plugging the Sluices at Chief Joseph Dam

The 24 sluiceways that carried the river's flow during construction of Chief Joseph Dam now are being plugged with concrete to force water over the 174-ft crest of the big dam's spillways. To close the 8x16-ft openings, heavy steel gates are lowered in front of the upstream openings. Then, an open caisson (above) is placed on the face of the dam around the downstream openings. After the dammed-off space is dewatered, grout is pumped in through pipes under pressure to plug the gaps.

Tudor Calls for Legislation To Clear up Water Policies

Much legislation is needed to clear up conflicts now existing in our national water policy, Ralph Tudor, former Undersecretary of the Interior, told a meeting of the California State Chamber of Commerce in San Francisco.

Tudor told the audience of California industrial and agricultural leaders that specific and official recommendations would be forthcoming soon. The Hoover Commission will report to Congress, and the Cabinet Commitee on Water Resources will report to the President.

Tudor said water resource development should be conducted on a drainage basin basis. Master blueprints should be prepared under an interagency committee, although that doesn't necessarily mean a federal agency should do the building job. Tudor said he does not favor valley authorities.

Tudor stated his belief that consolidation of the Corps of Engineers, the Bureau of Reclamation and the Soil Conservation Service would accomplish no great good. There is, however, a conflict of laws under which these agencies operate, he said.

A competent, independent review board is needed, according to Tudor. This will help assure uniform administration and help prevent individual agencies from justifying pet projects that might be unsound.

President Gets Governors' Highway Report

Key recommendation calls for federal government to spend $25 billion on the interstate system during next 10 years

The executive committee of the Conference of Governors last week approved and sent to the White House a special report prepared by its highway committee urging the federal government to spend $25 billion for construction on the interstate highway system during the next 10 years.

The report was the result of studies conducted by the governors at the request of President Eisenhower who proposed last spring that the nation should increase its spending on highways by $50 billion during the next 10 years.

Gov. Kohler of Wisconsin was chairman of the special committee that drafted the report. It is said to contain 85 pages of factual data. The nine-member executive committee, headed by Gov. Robert Kennon of Louisiana, approved the report in a closed meeting. The report then was sent to the White House with a copy to Gen. Lucius Clay, chairman of the President's special highway advisory committee.

• **Six major recommendations**—Gov. Kennon issued a statement interpreting the special report of the Kohler committee. It said, in effect:

• An adequate highway construction program based on present and future needs for the next 20 years will require double the present and projected rates of federal, state and local expenditures.

• If such a program is undertaken, the various highway systems should be divided into three categories, for purposes of financing. They include: the 40,000-mi interstate system including essential urban access roads; other federal-aid systems; and the state and local systems.

• Since the national government has a major and over-riding interest, both military and civil, in the interstate highway system, it should assume primary responsibility for financing the construction of the interstate system.

• Federal funds totaling about $25 billion needed for financing construction of the interstate system during the next decade could be secured from general revenue; by the issuance of bonds or other securities in anticipation of future general revenues; or by the establishment of a national road financing authority.

• The states or their political subdivisions, as each state may determine, will be responsible for the actual construction, maintenance, administration, and policing of the interstate system.

• The states and their localities will continue to have primary responsibility for the construction of all other systems, with the proviso that as long as the national government levies excise taxes on motor fuels, lubricants and motor vehicles, it will continue to make allocations to the states for highway construction on the other federal-aid systems, at least at the rate obtaining under the Federal-Aid Highway Act of 1952 and in accordance with existing formulas.

Approval of the six-point highway report was well timed. The executive committee meeting was held just prior to the three-day conference of the Council of State Governments. This permitted presentation of the report in broad outline as part of a panel discussion of highway construction and financing.

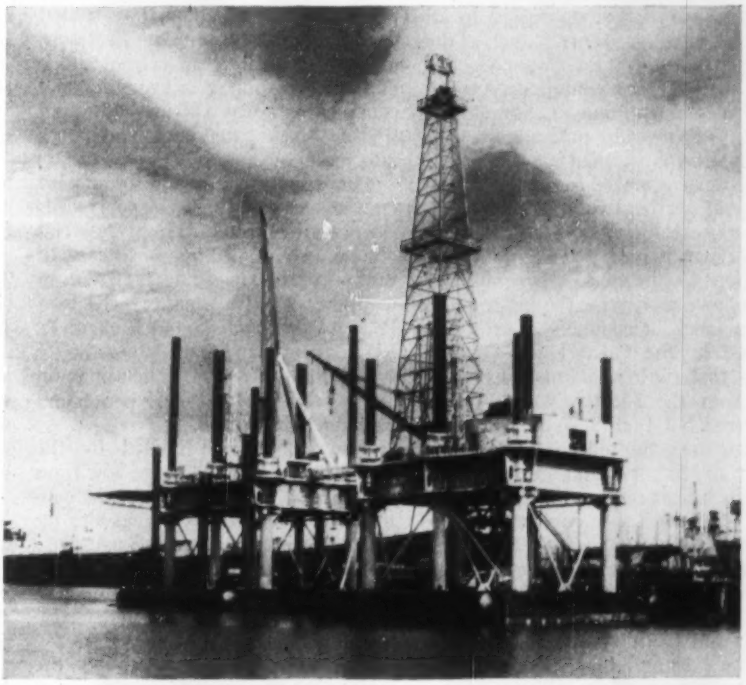
Upwards of 300 state officials—including top highway officials, legislators and a dozen governors—were on hand to learn the details of the plan to double the rate of roadbuilding for the next 10 years and meet the goals of the President's $50-billion program.

• **Clay committee's views**—The fact that Gen. Lucius D. Clay was one of the panel members added interest to the meeting. Gen. Clay was in complete accord with Point 4 of the governors' report, that the interstate highway should be built with $25 billion of federal funds.

This $25 billion of federal funds for interstate highway construction, said Gen. Clay, will be only about one-half of the 10-year, $50-billion program. The remainder would be chiefly the responsibility of state and local interests.

Gen. Clay pointed that the states would receive credit for such portions of their highways as meet the standards and qualify as part of the interstate system.

Gen. Clay said none of the $25 billion of federal funds for interstate highways would be used as a replacement of other roadbuilding funds.



"Mr. Gus" Wades Deep

This mobile offshore drilling rig is named for Gus Glasscock of C. G. Glasscock Drilling Co., which owns and operates it under contract with Shell Oil Co. It is designed to operate in water up to 100 ft deep and is now drilling its first well off the Texas Coast. The drilling platform (right) and the service platform (left) are towed separately to the drilling site. Hydraulic jacks force the 4-ft dia corner piles into the ocean floor. The lower hulls are then water-filled and sunk, helping the piling support the upper hulls and increasing the unit's stability.

Lake Channels

Army Engineers' report says Great Lakes need $110-million dredging job

Plans for deepening of Great Lakes connecting channels at a construction cost of nearly $110 million got a boost from the Corps of Engineers last week. Col. W. P. Trower, Great Lakes Division Engineer, and his district engineers recommended that the United States deepen the channels to accommodate the bigger ships which will enter the lakes through the St. Lawrence Seaway.

Washington observers expect Congress to vote money for the project before the next session comes to an end, but several steps remain to be taken before Congress can act.

To start with, proponents and opponents of the channel deepening have until Dec. 30 to present their views in writing to the Board of Engineers for Rivers and Harbors, in Washington, D. C. The board will arrange hearings if necessary.

Early next year, the board will report its findings and recommendations to the Chief of Engineers, Maj. Gen. Samuel D. Sturgis. Gen. Sturgis then will submit a report to the governors of the Great Lakes states and to all interested federal agencies—such as the Budget Bureau and the Commerce Department—for their comments. As soon as the comments are in, Sturgis will send his final report to Congress, with the comments attached.

No delay is looked for in getting the approval of the Public Works Committees of the two houses. Favorable action may be predicted for the Appropriations Committees, which will have to approve money for the project.

Engineer recommendations submitted by the Great Lakes Division show that the cost estimate has gone up from the $100 million reported earlier (ENR June 3, p. 21). Price increases since the older estimates were made and minor modifications account for the higher estimate.

The Great Lakes engineers recommend that both the downbound and upbound channels be deepened to 27 ft in the St. Mary's River, Straits of Mackinac, St. Clair River, Lake St. Clair and Detroit River.

The existing federal project for the connecting channels calls for a controlling depth of 25 ft for downbound traffic and 21 ft upbound, when the ore carriers are less heavily laden. Some $40 million to $50 million of dredging work remains to be done on the presently authorized project.

Increased construction cost of the greater 27-ft depth is estimated at $109,027,000 by the Great Lakes Division. The deepening also would increase maintenance costs by $200,000 a year, the engineers say.

Vessels of 27-ft draft will be able to pass through the locks of the St. Lawrence Seaway. Even at the new channel depth recommended, the controlling safe draft for the Great Lakes connecting channels will be from 1½ to 3 ft less than in the Seaway.

Based upon the record of lake levels since 1922, the engineers estimate that vessels of 24-ft draft can pass safely through the deepened connecting channels practically throughout the entire year.

Savings to Great Lakes commerce economically justify the cost of deepening the connecting channels to 27 ft, say the Corps of Engineers field officers in their report.

Sewage Disposal

Los Angeles committee recommends big program

A citizens' committee has come up with recommendations aimed at solving Los Angeles' complex—and hotly debated—sewage disposal problem.

The solution would involve a $45-million bond issue; Hyperion disposal plant from a high-rated activated sludge facility to primary treatment use only; extending an existing 12 ft dia, mile-long outfall to five miles; and constructing a new 180-in. dia line for sludge disposal extending about 7½ mi into the ocean.

The committee of 23 prominent citizens, appointed by Mayor Norris Poulson (ENR Feb. 25, p. 26), employed two consulting engineers to work separately in aiding the group in its studies. The two engineers—Richard Pomeroy of Pasadena and Richard R. Kennedy of San Francisco—came to substantially the same conclusions on altering the functions of Hyperion and extending the outfall.

Basic conclusion reached by the committee is that all sewage flow from the area of Los Angeles should continue to go to the Hyperion site (at Santa Monica Bay) for discharge.

The committee's prime objective is the selection of a plan to assure protection of bathing beaches and recreational areas in Santa Monica Bay.

Consulting engineers assured the group that modifications at Hyperion would improve conditions; the longer outfall would discharge deep enough to assure diffusion, and there would be a good possibility that effluent would never reach the ocean surface.

Indications are that the city council will adopt the proposals and submit a bond proposal to voters in April.

Baltimore Tunnel

$36.7-million contract on big harbor tunnel job to be advertised Feb. 1

The first—and by far the biggest—contract for construction of the $130-million Baltimore Harbor Tunnel will be advertised about Feb. 1, 1955, the Maryland State Roads Commission announced.

The contract will cover dredging of the trench tunnel, fabrication of the tunnel tube sections, construction of ventilator shafts at each end of the tunnel and tunnel paving and finishing. Total amount will be about $36.7 million. Some 3.3 million cu yd will be dredged in the trench tunnel. Construction is expected to start about April 1.

Total construction cost of the 1.7-mi crossing is expected to amount to $94 million. Cost of land and right of way, engineering fees and administrative expenses will bring total cost to $130 million.

The commission said several additional contracts would be advertised "a few months" after the first contract. These will include two $2.7-million contracts for construction of cut and cover tunnels and open depressed ramps at each end of the project, and two $1.6-million contracts for construction of ventilation buildings at either end.

The final contract for the project is scheduled to be advertised on Nov. 15, 1956. A total of 25 contracts will be let.

With normal weather conditions, construction will require 32 months embracing three construction seasons. The commission hopes that the project will be completed by December 1957.

The tunnel will be a twin-tube structure providing four lanes of traffic. Each tube will have a roadway width of 22 ft and a sidewalk 2 ft. 8 in. wide. Vertical clearance above roadway elevation will be 14 ft.

Prefabricated tunnel sections each 300 ft long will be floated into place and sunk on sandbeds in a dredged open trench. After the sections are connected, the trench will be backfilled to provide a cover of not less than 5 ft over the tunnel.

Short sections of cut and cover tunnels at each end will be constructed in the dry of structural steel bents and reinforced concrete. The tunnel roadways will be brought to the ground surface by open ramps of reinforced concrete. Maximum roadway grade will be 3½%.

J. E. Greiner Co. is consulting engineer for the project.

DRILLING an angle-hole in the shale bank above the dam's stilling basin.

Engineers Attack Landslides at Oahe

Landslides in shale banks, long an engineer's nightmare, are being thwarted by drilled ground water drains at the Army Engineers' Oahe Dam, near Pierre, S. D. Placed at a nearly horizontal angle, the drains relieve water pressure that might trigger destructive slides.

The use of the angle-hole technique did not originate with Army Engineers. It has been used elsewhere, particularly along the Pacific Coast. But the Oahe Dam work is both the largest single application and the first use of the technique in a rock mass.

The angle-hole protection at Oahe safeguards the dam's stilling basin, a multi-million-dollar concrete layout as big as five football fields. To place the stilling basin, engineers had to notch down 260 ft into a shale bluff. They cut the bank back into an easy one-on-five slope to minimize shale slides.

In normal circumstances, such a cut-back would make the bank safe against slides. But Oahe's Pierre shale formation isn't normal. It is fractured with fault and joint planes and is horizontally separated by seams of slippery bentonite. The shale slides as easily as sugar in a teaspoon. Bentonite in its completely weathered state is much like axle grease.

"We're not afraid of shale. But we do respect it," said Stanley F. Gizienski, head of special studies and foundation design for the Omaha district.

The trigger mechanism in slides is ground water pressure. Ground water can be potent stuff. It tends to loosen the earth and let it drift off horizontally. Loose soil can move around and adjust its contours to accommodate itself to the water pressure.

The stilling basin at Oahe disturbed nature's equilibrium by carving out a set of contours different from the natural ones. Acting on the earth mass was ground water that in places was 180 ft above the stilling basin.

The forces involved were tremendous. Engineers calculated that, in the spillway area, ground water was exerting 3.5 million tons of force upward. At the same time, it was pushing the earth toward the spillway excavation with 43,400 tons of force.

Obviously, the way to insure against slides was to ease this pressure. This could be accomplished by intercepting wells. But because of the steep dip of the fault planes ordinary vertical wells wouldn't do the job. Instead, wells had to be driven horizontally so as to intersect as many of the fault and joint planes as possible.

The drilling of these wells, which require special procedures, now is going on. They are being drilled 600 ft deep, and the probabilities are that the depth will be increased to 1,000 ft. Three holes have been completed. Tentative plans call for 25 additional angle-holes. They are spaced about 100 ft apart.

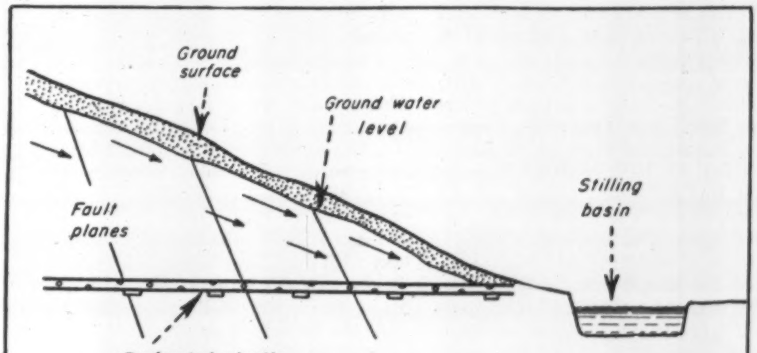
The holes are 8 in. in diameter. Inside each is set a 2-in. perforated pipe of plastic (the chemical-laden ground water would quickly corrode metal). Porous sand and gravel then is blown in to pack the hole. The first three test holes have been flowing about 1,000 gal a day.

Piezometers are being installed at strategic points in the area to give a check on the water table and to warn against a dangerous level. The angle-hole program, carried out by Army Engineers themselves, is being rushed so as to be finished before next spring's thaw, when the ground water will be at peak level.

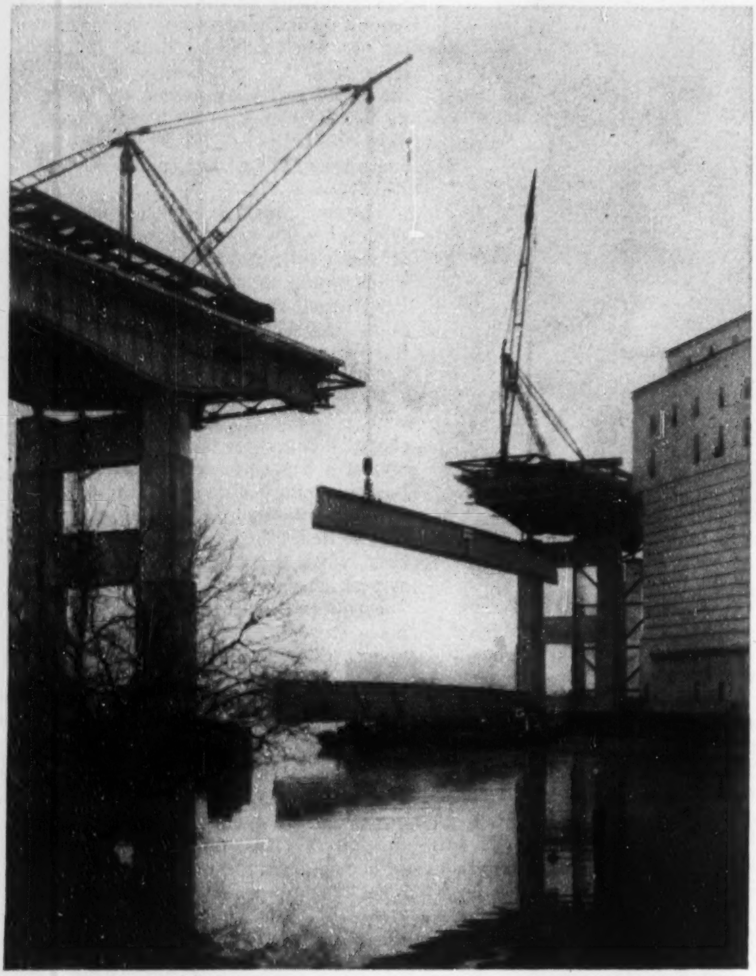
Engineers calculate that the angle-holes will increase the safety factor against slides by 15%. Draining the water will reduce the uplift force by two-thirds. The horizontal water pressure will be reduced by nearly half.

The alternative to the relatively inexpensive holes would have been to excavate the earth slope to a flatter grade than was used. This would have run into expensive grading costs.

The studies and plans for the angle-holes were under the supervision of Henry A. Sikso, chief of the foundations and materials branch. Taking part in the studies were John A. Trantina, chief of the geology section; D. K. Knight, chief of the embankment, pavement and materials section, and Gizienski. The work in the field is under the supervision of John Sibert, Oahe area engineer, and under the direct supervision of Lloyd Underwood, project geologist.



DRAINS intersecting fault planes are flowing at the rate of 1,000 gal per day.



SUSPENDED SPAN of 348 ft over Buffalo Ship Canal was closed with a 208-ft girder, 120 ft above the water. Cantilevers supporting the girder extend 70 ft from the piers.

Girder Completes Near-Record Span

One of the longest steel girder spans in the country is being erected over the Buffalo Ship Canal at Buffalo, N. Y. Part of a $12-million, high-level bridge, a pair of plate girders, 40 ft c-c, span 348 ft.

Record span for the U. S. is 375 ft, established by continuous plate girders in the New Jersey Turnpike crossings of the Passaic and Hackensack Rivers (ENR Jan. 17, 1952, p. 30).

The Buffalo girders consist of two 70-ft cantilevers and a 208-ft-long suspended span. The suspended girders, 12½ ft deep, weighing 167 tons, were erected full length late last month.

Two derricks each of 115-ton capacity with 115-ft booms, were set atop the piers on either side of the crossing for the purpose. They lifted the steel from a barge on the canal and held it 120 ft above the water until the girders could be connected with a 13-in.-dia pin to the cantilevers. Because of the great length of the suspended span, the girders were braced with erection frames located 30 ft from the pins until the floor system could be placed.

The 208-ft girders were brought to the site by railroad in three sections. There, they were assembled on a barge, prior to erection.

Constructed for the New York State Department of Public Works, the bridge skirts the Erie lakefront. It will speed flow of traffic between Buffalo and its southern suburbs and will connect with the 25-mi Niagara section of the New York State Thruway. Next spring the bridge will be extended to cross the Buffalo River.

Bates & Rogers Construction Co. is the prime contractor for the superstructure. Steel is being fabricated and erected by the Bethlehem Steel Co., with G. B. Shaw, Jr., managing erection.

Jobs in the News

OFFICE BUILDINGS—George A. Fuller Co., New York, N. Y., has been awarded contracts for construction of two office buildings on Park Ave. in mid-town New York City. One will be a 34-story headquarters building for Seagram Distillers Corp.; Pereira & Luckman, New York, are architects. The other—a 30-story office building for a syndicate represented by George J. Engler, New York—is designed by Kahn & Jacobs, New York. Estimated cost of each is $15 million.

DAM—Merritt-Chapman & Scott, New York, N. Y., and Savin Construction Corp., East Hartford, Conn., submitted the low bid for construction of Gorge High Dam on Skagit River for City Light Department, Seattle, Wash. Amount of bid was $14,731,000.

DEVELOPMENT—The first section of a $22-million residential development in Norwood and Westwood, Mass., will consist of 600 residences. These will be built by Norwood Properties, Inc., Boston, under separate contract at an estimated cost of $8 million. Lester N. Lechter, Boston, is architect.

Illinois Reduces Program For Building Toll Roads

Plans of the state of Illinois to build 476 mi of toll highways at an estimated cost of $563 million (ENR June 10, p. 23) have been cut to 193 mi at a cost of $390 million. All work on the reduced program is in the northern part of the state.

Included in the revised program are three projects:

The Tristate route, 80 mi long, which begins with a connection with the Indiana Turnpike at the Indiana-Illinois state line, bypasses Chicago to the south, west and north, and terminates at the Illinois-Wisconsin line.

The North Illinois route, 88 mi long, which starts from a connection to Cicero Ave. on the north side of Chicago, runs west to the outskirts of Rockford, and then north to the Wisconsin line near Beloit, where a connection could be made to a proposed toll road across Wisconsin to St. Paul.

The East-West route, which starts at the Tristate route on the west side of Chicago and extends to Aurora, a distance of 25 mi.

Postponed is a proposed continuation of that East-West route across the state to Rock Island and a proposed toll road across the southern part of the state from East St. Louis to the Indiana line near Terre Haute.

CITY BY CITY

Positive Reaction

Detroit—For six months Detroit officials have been debating the merits of a proposed $15.5-million program to provide off-street parking facilities for some 7,500 cars. Now a favorable report from a recently completed survey may settle the question.

The survey by the New York engineering firm of Parsons, Brinckerhoff, Hall & Macdonald confirms the feasibility of the Municipal Parking Authority's parking program. The work reportedly could be financed by revenue bonds over a 40-year period, or possibly within 30 years.

If the program is approved by the city's common council, the new facilities could be in operation within three years.

The authority's plan calls for construction of four garages (one of them underground) in the downtown business district. Total capacity: 2,980 cars. Cost: some $8.5 million.

In addition, the Civic Center on the Detroit River would get five parking facilities: a 660-car garage costing $1.5 million at the Henry & Edsel Ford Auditorium; two garages, a parking lot and a roof parking lot for the proposed Convention Hall and Exhibits Building, costing a total of $4.5 million and able to hold 2,853 cars.

Four more lots in outlying areas would take care of 1,045 cars, cost $814,000.

Wasting No Water

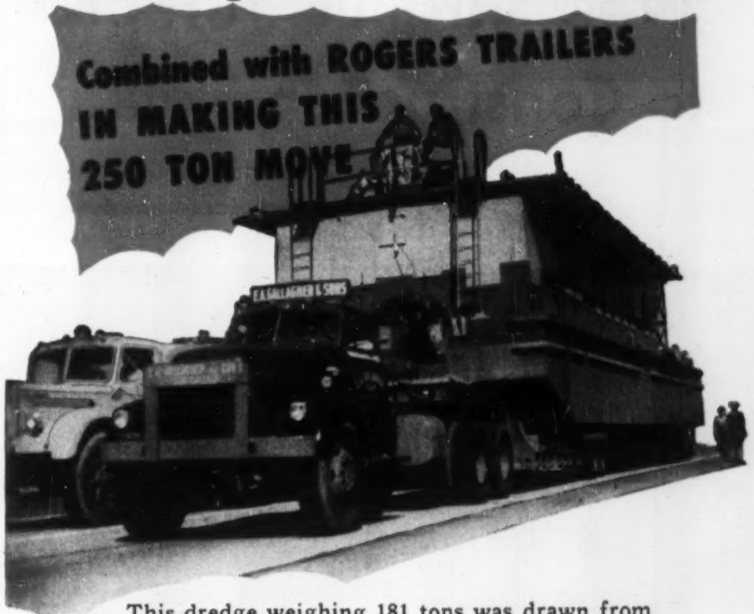
Denver—The Denver Water Board —beset by continuing drought and unprecedented residential expansion—has ordered commercial and industrial water users to install re-circulation devices to conserve water.

The order requires installation of re-circulation equipment by existing buildings, businesses and industries with cooling or air-conditioning systems having a capacity of two tons or more of refrigeration, and those using more than 20,000 gal of water per month in cooling, heating or industrial processing. All new systems installed after Dec. 15 must be equipped with approved conservation devices.

Re-circulation devices will reclaim at least 90% of the water used for cooling, heating or manufacturing purposes. And they will save some 12,000 acre ft of water annually—enough to supply all needs of 48,000 persons for one year.

(*Continued on page 30*)

THE LIFT OF THE TIDE
and Expert "Know-How"



This dredge weighing 181 tons was drawn from a creek at Repaupo, N. J., moved 5½ miles and launched in the Delaware River. Additional equipment, a total of 250 tons, was also moved in 20 loads.

A special ramp was built at the river, the dredge "winched" into position and the lift of the 6 foot tide used to float the dredge.

Two weeks were required for this entire operation. But the actual moving was done in one day on two Rogers 50-ton low bed trailers and two Rogers 75-ton dollies.

"KNOW HOW" based on long experience was displayed by E. A. Gallagher of Philadelphia in this unusual move. Apparently, too, they KNOW that Rogers equipment can't be beat for these difficult operations.

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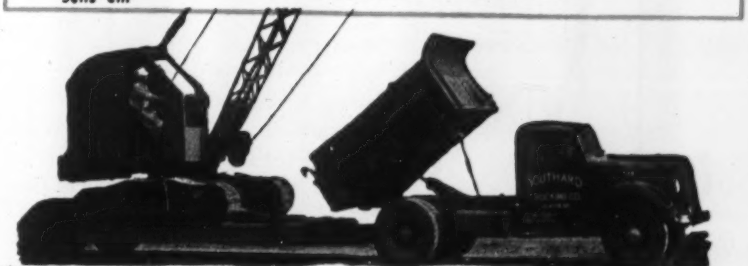
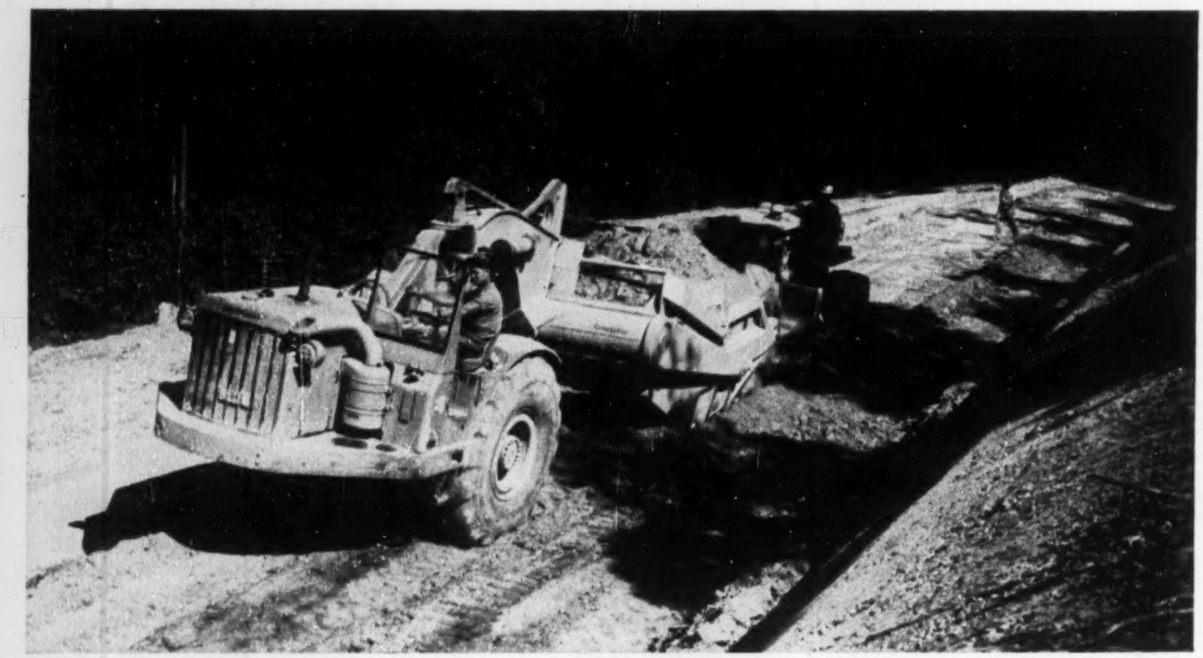


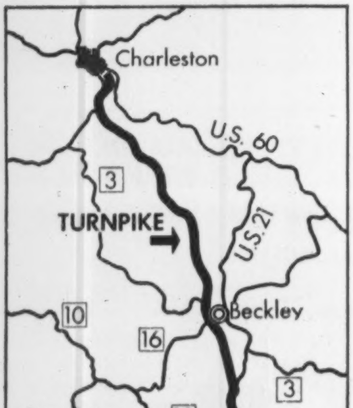
Attaching of loaded Rogers Togalong trailer

West Virginia Turnpike: A Salute to Construction Skill

280 units of CAT* equipment helping contractors complete $100,000,000 job on schedule



A DW21 with No. 21 Scraper, owned by Oman Construction Co., is push loaded on a section of the turnpike near Beckley, W. Va.

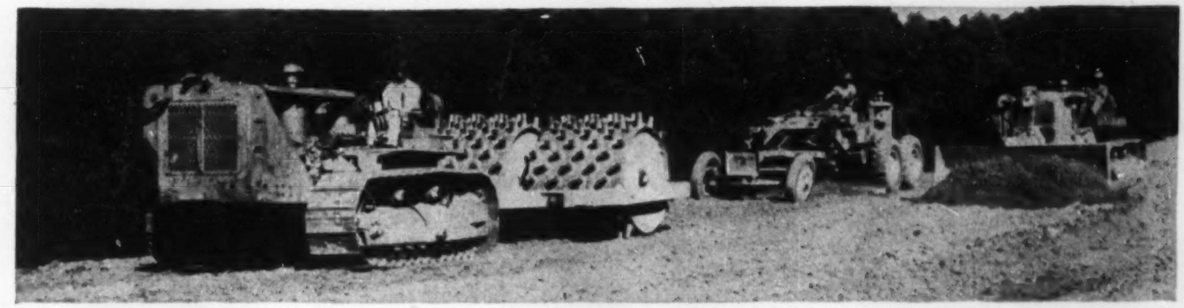


The 88-mile West Virginia Turnpike is expected to be ready for use this fall. Built through mountainous country for most of its length, the project has required moving some 31,000,000 cubic yards of earth for fill. During the spring and summer 3,000,000 tons of crushed rock has been spread in a 14-inch blanket, the full width of the grade, and 1,600,000 square yards of concrete paving have been laid.

This huge earthmoving job has been handled fast. During good weather a million cubic yards a week was the regular rate, and a high percentage of the material was rock.

With a maximum grade of 5 per cent, the new turnpike follows the sides of valleys throughout much of its length. The standard roadway is 50 feet wide, but many miles of extra-width grade have been built to take care of future dualization. Starting at 600 feet elevation in the Kanawha Valley near Charleston, the highway climbs to a maximum of 3200 feet at Flat Top, then descends to 2000 feet at Princeton.

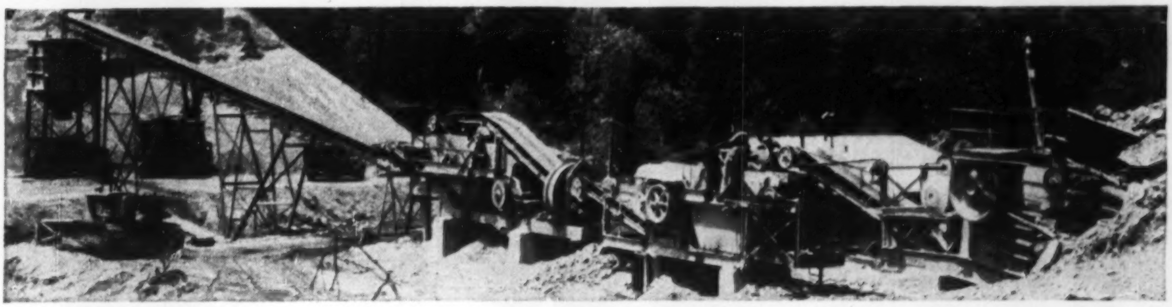
It is expected to cut driving time by half, reducing over a thousand curves in the old road and shortening the distance by 32 miles.



Pulled by a Caterpillar Diesel D8 Tractor, this sheepsfoot tamper compacts earth on the Beckley section of the turnpike.

This Cat No. 12 Motor Grader works over new fill while a DW21 wheel Tractor speeds past for another load.

Caterpillar DW20 Tractors with No. 20 Scrapers are used by Clark, Farrell & H. N. Rogers to move earth near Pax, W. Va.



Two big Cat Diesel Electric Sets—a D386 and a D364—furnish all power for this crusher plant, operated by Central Materials Corp., near Kingston, W. Va.

Scores of contractors and subcontractors have shared in this accomplishment. And everywhere along the construction route the famous "highway yellow" of Caterpillar* heavy-duty machines has been in evidence. Included in the equipment are D8, D7 and D6 Tractors, DW20 and DW21 wheel-type Tractors, matching Caterpillar-built Bulldozers and Scrapers, Motor Graders, Cat Engines and Electric Sets powering shovels, compressors, crushers and light plants.

Experienced contractors know machines built by Caterpillar are moneymakers. They can be depended on to stay at work month after month, under all conditions, with a minimum of down time. And when service or parts are needed, they can be supplied by the nearby Caterpillar Dealer.

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Two-wheeled Ingersoll-Rand GYRO-FLO 210 compressor, powering paving breakers on U.S. No. 1 in New Jersey.

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N62	4	2⅜	3½	62	15 @ 2200 RPM
Y69	4	2½	3½	69	21.4 @ 2400 RPM
Y91	4	2⅞	3½	91	28.5 @ 2400 RPM
Y112	4	3 3/16	3½	112	32 @ 2400 RPM
F124	4	3	4⅜	124	36 @ 2400 RPM
F140	4	3 3/16	4⅜	140	42 @ 2400 RPM
F162	4	3 7/16	4⅜	162	49 @ 2400 RPM
F186	6	3	4⅜	186	60.5 @ 2400 RPM
*E201	4	3⅝	4⅞	201	59 @ 2000 RPM
F209	6	3 3/16	4⅜	209	68 @ 2400 RPM
F226	6	3 5/16	4⅜	226	73 @ 2400 RPM
F244	6	3 7/16	4⅜	244	79 @ 2400 RPM
M271	6	3⅝	4⅜	271	86.2 @ 2400 RPM
M290	6	3¾	4⅜	290	92.2 @ 2400 RPM
M330	6	4	4⅜	330	104.4 @ 2400 RPM
M363	6	4	4 13/16	363	109 @ 2000 RPM
B371	6	4⅛	4⅝	371	110 @ 2400 RPM
B427	6	4 5/16	4⅞	427	127 @ 2400 RPM
G134	4	3⅛	4⅜	134	32.2 @ 2000 RPM
G157	4	3⅜	4⅜	157	37.7 @ 2000 RPM
H227	4	3⅝	5½	227	52 @ 1800 RPM
H243	4	3¾	5½	243	56 @ 1800 RPM
*H260	4	3⅞	5½	260	60 @ 1800 RPM
T371	6	4⅛	4⅝	371	119 @ 2400 RPM
*J382	4	4½	6	382	74.2 @ 1400 RPM
T427	6	4 5/16	4⅞	427	140 @ 2400 RPM
U501	6	4½	5¼	501	160 @ 2400 RPM
R513	6	4½	5⅜	513	164.3 @ 2400 RPM
R572	6	4¾	5⅜	572	182.4 @ 2400 RPM
R602	6	4⅞	5⅜	602	191.7 @ 2400 RPM
S749	6	5⅜	5½	749	217 @ 2200 RPM
S820	6	5⅝	5½	820	237 @ 2200 RPM

INDUSTRIAL DIESEL ENGINES

Model	Cyl.	Bore	Stroke	Displ.	Bare Engine H.P.
GD157	4	3⅜	4⅜	157	39 @ 2000 RPM
*ED201	4	3⅝	4⅞	201	45.8 @ 2000 RPM
HD243	4	3¾	5½	243	54.7 @ 2000 RPM
*HD260	4	3⅞	5½	260	59.3 @ 2000 RPM
*JD382	4	4½	6	382	72.5 @ 1600 RPM
TD427	6	4 5/16	4⅞	427	106.5 @ 2000 RPM
RD572	6	4¾	5⅜	572	142.5 @ 2000 RPM
SD802	6	5 9/16	5½	802	202 @ 1800 RPM

*Available for industrial applications only.

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When choosing construction machinery, always remember that the leading makes of specialized equipment for every operation, from excavation on through final grading, offer the plus value of dependable Red Seal power. And Red Seal *means* plus value, because every model, no matter in what machine you find it, is engineered with the specific needs of that machine in mind. Red Seal industrial engines—14 to 237 horsepower—are backed by parts and service coast to coast. Look for the Red Seal Trademark on the engine of the equipment you choose.

• • •

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Continental Motors Corporation
MUSKEGON, MICHIGAN

The order is the latest in a series designed to meet the acute water shortage. Last June domestic water users were rationed on water for lawn and other irrigation purposes. In October another restriction banned all lawn sprinkling, irrigation and use of water hoses for any residential purpose.

Denver water officials claim that present supplies are sufficient to allow expansion of the metropolitan area at the current rate only until 1963. One plan to provide water—a $75-million diversion project that would bring in an additional supply from the Blue River on Colorado's western slope—was defeated by a recent State Supreme Court ruling (ENR Nov. 4, p. 28).

1,000 New Homes

New Orleans—One of New Orleans' first projects to provide housing for minorities of middle and higher income brackets will go up on some of the city's choicest undeveloped land—a 210-acre site around the new 185-acre Pontchartrain Park.

The $15-million project, planned to meet a deficiency in quality Negro housing, provides for construction of 1,000 homes in a price range from $9,800 to $25,000. Developer is Pontchartrain Park Homes, Inc.

Drainage work in the section is now under way, and construction of the first houses is to start next January.

Double Duty Development

Columbus, Ohio—A $20-million housing, hotel and business development is scheduled to get under way this month on a 140-acre site north of the Ohio State University campus.

The development—University City—will be geared to serve both the University as well as Greater Columbus.

A five-year program set up by the developers—University City, Inc.—calls for construction of some 2,000 apartments in the popular price field, a medical center, hotels, institutional and office buildings.

Aluminum Skin Building

San Francisco—Construction is under way on San Francisco's first aluminum skin building—a $500,000 structure that will serve as a combination sales office-warehouse for Reynolds Metals Co.

The warehouse portion, to be leased to Clingan & Fortier, a Reynolds distributor, will be a one-story unit providing 38,000 sq ft of space. The office section, a two-story structure, will have 7,500 sq ft of space.

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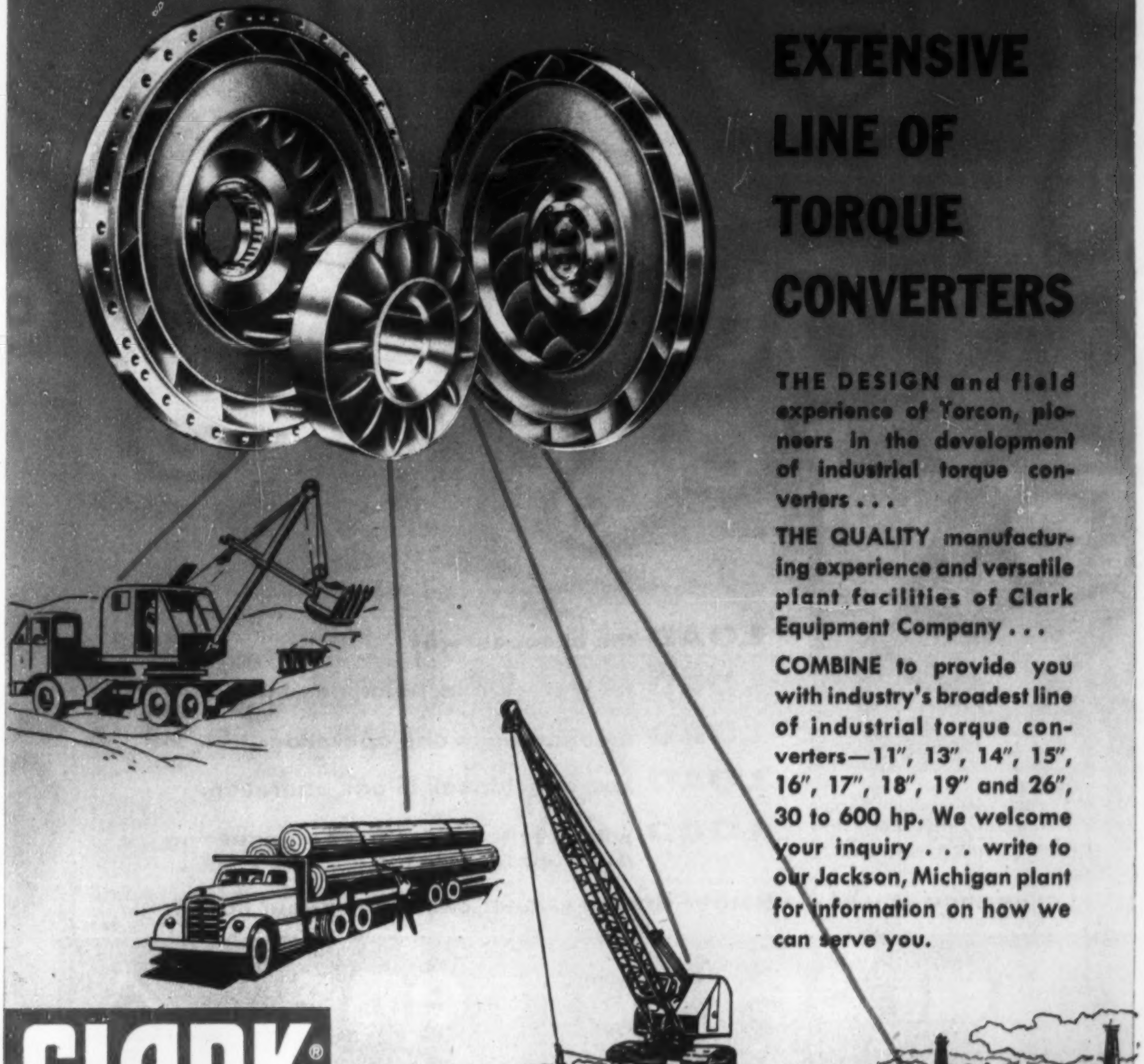

THE DESIGN and field experience of Torcon, pioneers in the development of industrial torque converters . . .

THE QUALITY manufacturing experience and versatile plant facilities of Clark Equipment Company . . .

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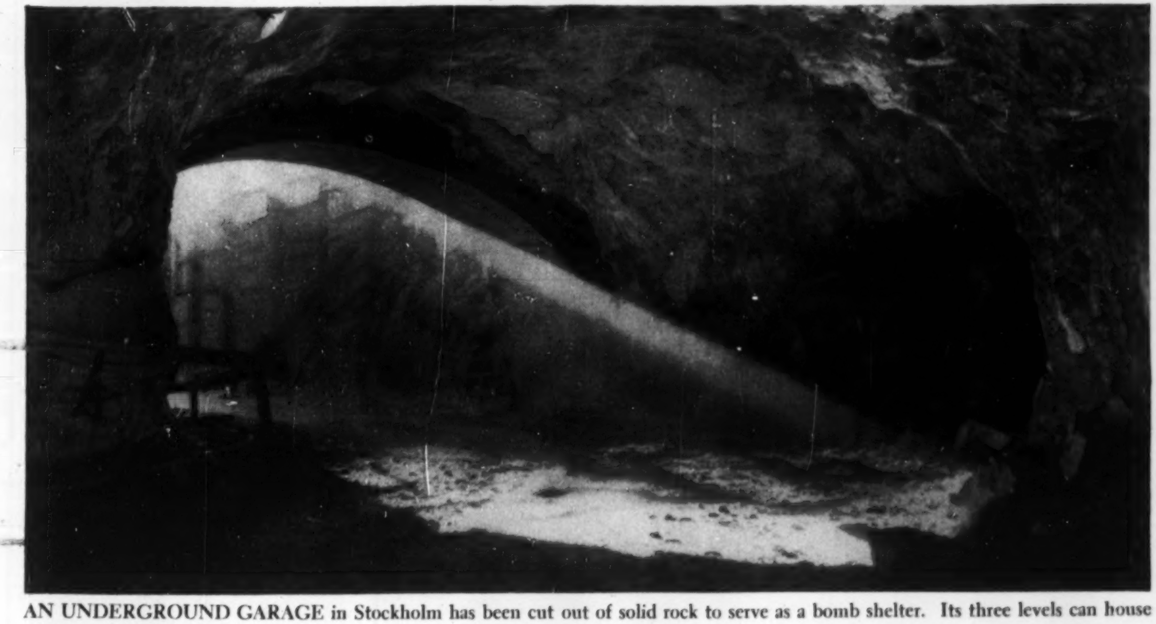


AN UNDERGROUND GARAGE in Stockholm has been cut out of solid rock to serve as a bomb shelter. Its three levels can house 600 cars and shelter 20,000 people.

Building Underground Pays in Sweden—Part I

G. Westerberg
Former Chief Director,
Swedish State Power Board
Stockholm, Sweden.

When large rooms cut out of solid rock were first used in Sweden to house manufacturing plants it was done for military reasons. Those deep rock chambers provided the best possible protection for key industries from aerial bombing attack. Now we are learning that this type of accommodation has other advantages.

It is true that the initial costs of this type of construction are somewhat higher, but if the capitalized costs for management, heating and upkeep are taken into account—provided the rock is of sound quality—the difference in cost between underground factories and factories of the conventional type above ground will be found to be small.

Fortunately for Sweden, the primary rock that is exposed or close to the surface in the more elevated provinces of the northern and central parts of the country is usually of a hard and sound quality.

The convenient accessibility of the primary rock in our country was scarcely regarded as an advantage by earlier generations; rather the reverse. In the meantime, however, people have gradually been learning the technique involved in the removal of rock, as several ore mines have been worked in Sweden for centuries. All improvements introduced in the technique of rock blasting have at once met with keen and widespread interest for the new methods or equipment.

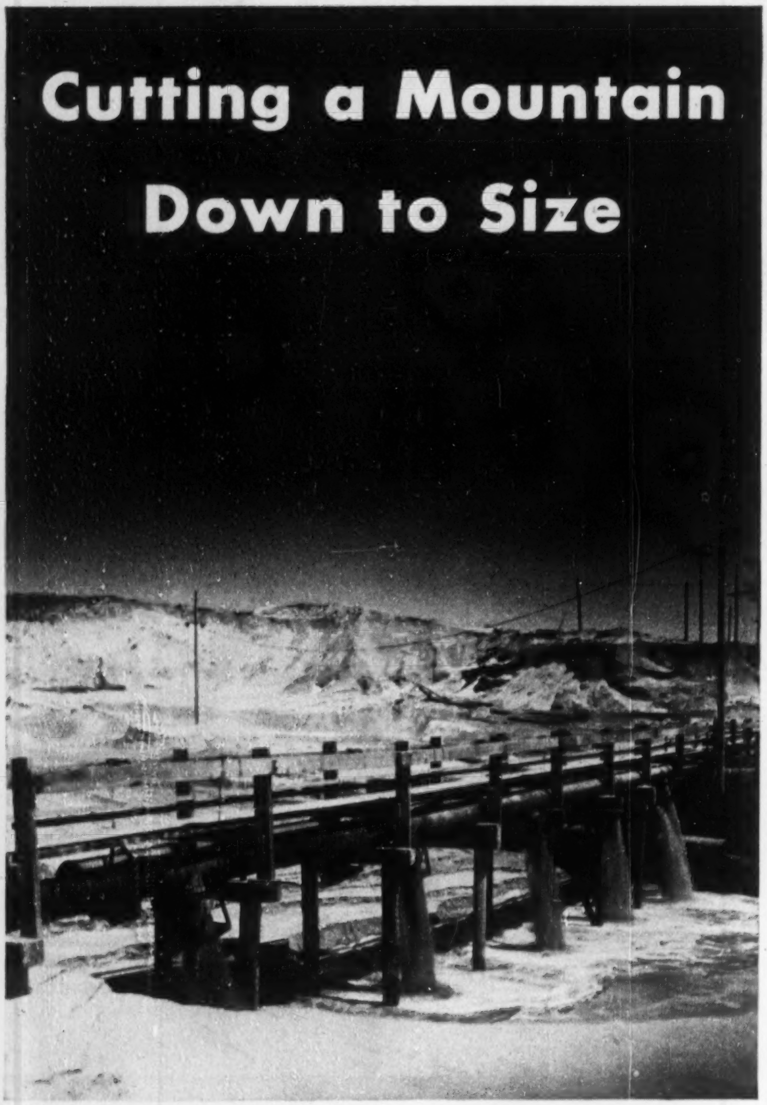
Developments in this respect have advanced rapidly during the past few decades, and our mountain districts have been extensively exploited for many purposes, chiefly owing to the comparatively cheap cost at which rock can now be handled.

In the circumstances, it now appears probable that we have every reason to look upon our primary rock as a valuable asset.

Modern power plants are frequently planned for installation underground. In such work the costs for tunneling usually represent an important item. In the modern technique of tunneling, advantage is taken of the fact that the working cycle is repeated over and over again and thus bears a certain resemblance to mass production processes in a factory. The excavation costs per cubic yard may be regarded as the cost of a factory product, and where a skilled and well-trained crew is avail-

(Continued on page 34)

DESTROYERS OR SUBMARINES can find shelter in this rock chamber, which is 60 ft wide and 100 ft deep.



It's no trick to move mountains when you have Naylor light-weight pipe to help you. This lockseamed-spiral-welded pipe is made to order for handling sand, gravel and water because it's stronger, leaktight and extra safe for this heavy-duty service. Naylor pipe is easy to handle and install, easy to move about as the job progresses — particularly with the one-piece Naylor Wedge-Lock coupling to speed connections. Write for Bulletin No. 507 on line pipe and Bulletin No. 513 on Naylor Wedge-Lock couplings.

NAYLOR PIPE

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Eastern U.S. and Foreign Sales Office: 350 Madison Avenue, New York 17, New York

able it may be much cheaper in comparison with single-cycle constructional work. For this reason, where the conditions are favorable, the underground power plant is frequently found to be the correct solution both from a technical and from an economic point of view.

Underground oil-storage plants are coming very much into favor in this country. Sweden does not possess any natural oil resources of its own and consequently is obliged to purchase the whole of its supplies abroad and store sufficient quantities not only to cover immediate requirements but for some time ahead in case imports should happen to be cut off for some reason or other. Although the U.S.A. is very rich in natural oil resources, the method of oil storage in bomb-protected premises may also be found of interest in that country.

Experience with underground storage of gasoline indicates that savings due to the practical elimination of evaporation will soon offset the added cost of storing that type of fuel on water in rock chambers.

Another use of rockrooms in Sweden that may be of interest in other countries is for underground garages, which can also be used as shelter for the population in the event of war. Such shelters are under construction in many Swedish towns, the largest being one built deep under Stockholm. It is essentially a tunnel 1,000 ft long, 57 ft wide and 37 ft high, with three levels and with access to streets at nine points.

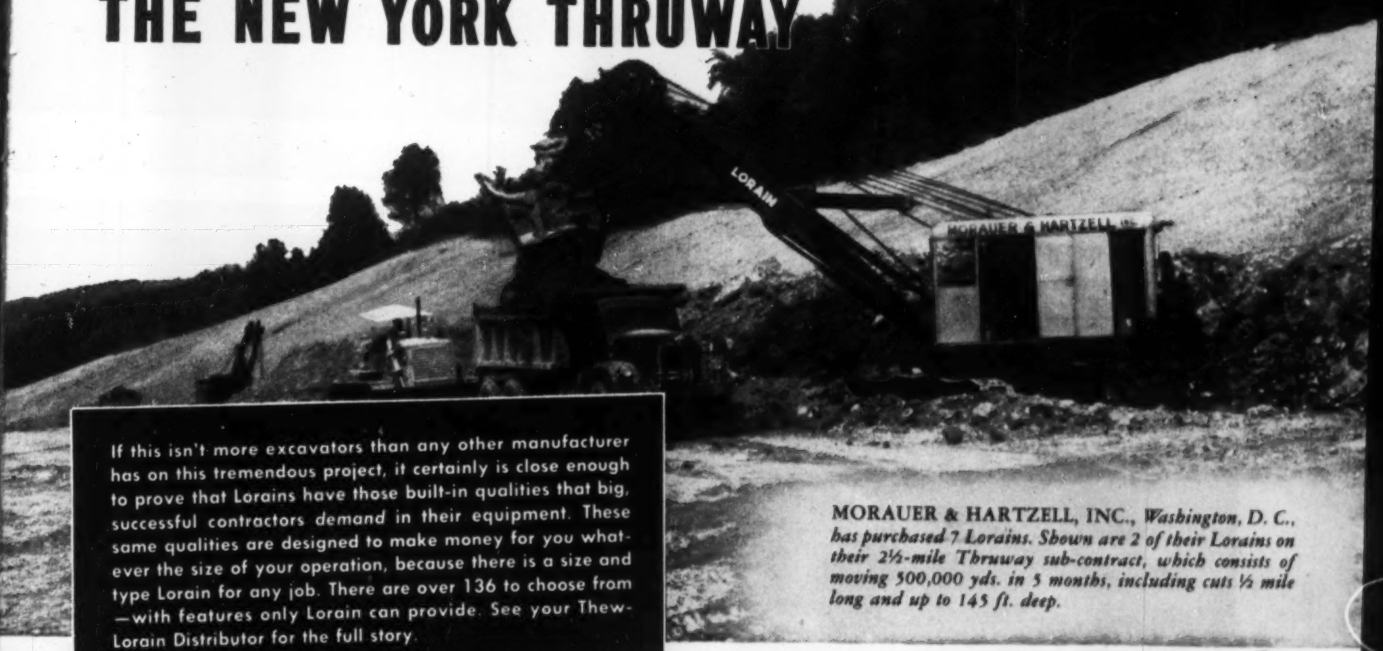
This underground chamber required blasting out 130,000 cu yd of rock. It could accommodate 20,000 people. For peace-time use, it will accommodate 600 automobiles.

Still another use of rock chambers, a purely military one, is as a bombproof shelter for submarines and destroyers. Obviously, this use is only possible in those countries which have high rock masses adjoining deep arms of the sea.

Although the experiences gained from installations in one locality or one country cannot be directly applied in other countries, an exchange of information about this underground construction probably would be advantageous. To that end, three engineers who have been closely associated with that work have been asked to prepare more detailed statements about some of the more important developments. The first of these, which relates to large rockrooms in general, follows on page 37. The others will be published in subsequent issues. They describe two large underground power plants and some of the important underground oil-storage installations.

111 LORAINS ON 1 JOB...

THE NEW YORK THRUWAY



If this isn't more excavators than any other manufacturer has on this tremendous project, it certainly is close enough to prove that Lorains have those built-in qualities that big, successful contractors *demand* in their equipment. These same qualities are designed to make money for you whatever the size of your operation, because there is a size and type Lorain for any job. There are over 136 to choose from—with features only Lorain can provide. See your Thew-Lorain Distributor for the full story.

MORAUER & HARTZELL, INC., *Washington, D. C., has purchased 7 Lorains. Shown are 2 of their Lorains on their 2½-mile Thruway sub-contract, which consists of moving 500,000 yds. in 5 months, including cuts ½ mile long and up to 145 ft. deep.*

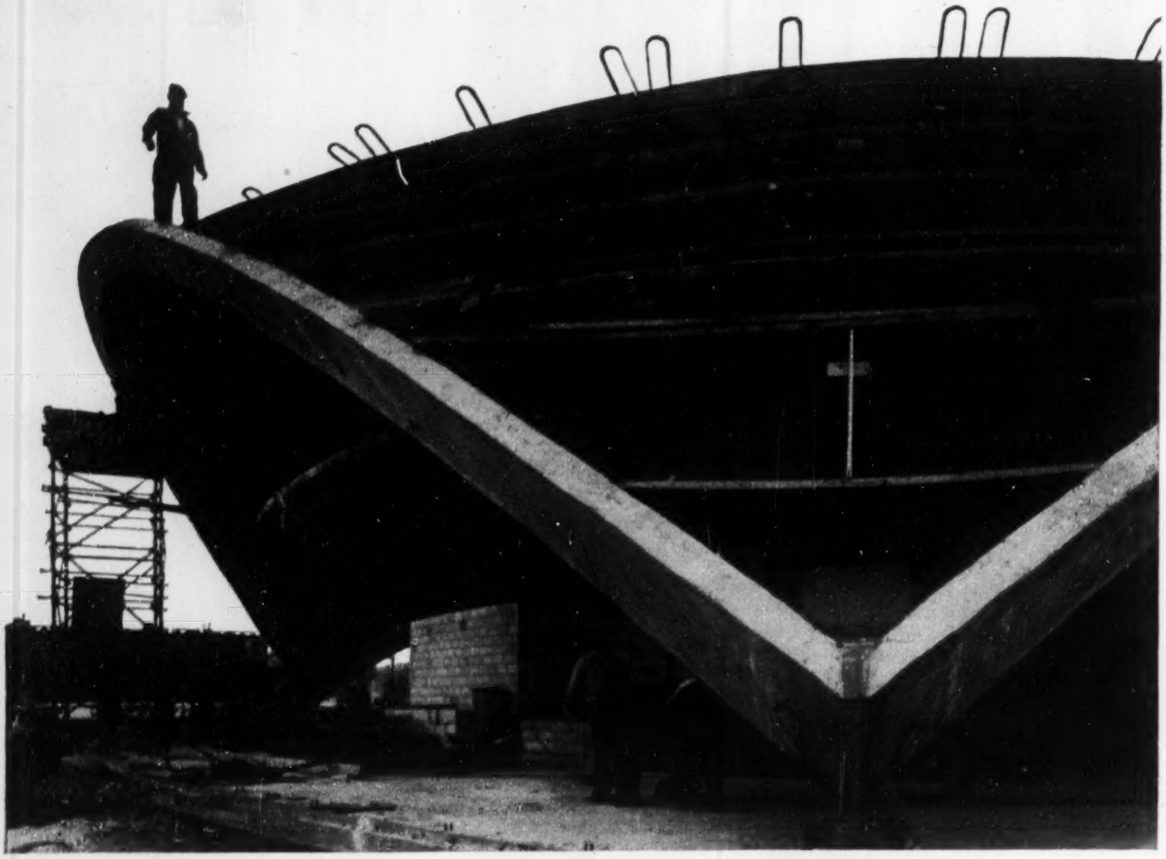
SAVIN CONSTRUCTION CO., *East Hartford, Conn., has purchased 46 Lorains. Their $27 million Thruway contract covers 27 miles. At left, is a 2-yd. Lorain 820-K "Special," equipped with a 26-ft. shovel boom, loading borrow at the rate of 200 yds. per hour. Right, another 820-K "Special," with clamshell bucket on a 70-ft. boom, feeds a batching plant.*

A. J. ORLANDO CONTRACTING CO., *Whitestone, L. I., N. Y., has a sub-contract for grading and is using these two Lorains to move a total of 6400 yds. every 8 to 10 hours. At left, is a 2-yd. 820-K "Special" which has moved as much as 370 yds. per hour in a mixture of dirt and rock. At right, another 2-yd. Lorain 820-K works nearby.*

NEW YORK THRUWAY FACTS . . . 427 miles long—will cost $555 million—over 80 million cu. yds. of excavation and fill—525 bridge structures—9 million barrels of cement, 4 million yards of stone, 2 million yards of sand needed for concrete.

THE THEW SHOVEL CO., LORAIN, OHIO

THEW LORAIN



Spherical Triangle Roofs M.I.T. Auditoriums

Under construction at Massachusetts Institute of Technology is a striking $1.5 million building containing two auditoriums. One auditorium, seating 1200, is at grade level, the second, seating 200, is in the basement.

An unusual reinforced concrete dome roofs the building. The dome, actually an equilateral spherical triangle, eliminates the need for columns in the large auditorium, and also will assure excellent acoustical properties. Maximum clear height of the roof above the floor is 45 ft. Glass walls will extend from the lobby floor to the edge of the dome.

Reinforcing steel, supplied by Bethlehem, was installed on the entire dome form before any concrete was placed. Concrete was cast in three sections of about 95 cu yd apiece.

Bethlehem Reinforcing Bars, used on so many important concreting jobs from coast to coast, are made exclusively from new-billet steel, of known analysis. They come in size ranges from number 3 to 11, with deformations meeting ASTM Spec. A-305. They are cut to length and bent in our shops, and reach you bundled and tagged, with bar lists included, ready for instant placing.

Architects: Eero Saarinen and Associates, Bloomfield Hills, Mich. *Associates:* Anderson and Beckwith, Boston, Mass. *General Contractor:* George A. Fuller Co., Boston, Mass. *Consulting Structural Engineers:* Ammann and Whitney, New York City.

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11 BETHLEHEM BAR FABRICATING SHOPS

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BETHLEHEM STEEL

Bethlehem REINFORCING BARS

Industria International photo

THIS TRAFFIC TUNNEL serves the Bofors underground plant in Sweden. It was left unlined but is painted white.

Underground Room Construction—Part II

To assure adequate protection and long spans, practice suggests minimum overburden of 12 meters. Closely spaced drill holes and light charges necessary for smooth breaks

Sten G. A. Bergman
Chief Engineer, Research Bureau
Royal Fortification Administration
Stockholm, Sweden

Rockroom installations built in Sweden prior to 1940 were generally of minor size with spans of about 4 to 8 meters. The design of those structures was based on experience gained from construction of railroad tunnels and similar rockblasting enterprises. As a norm to determine the safety of roof construction it was considered sound practice that the thickness of the overburden should not be less than the span of the room. The rock surfaces of the rooms often remained undressed.

However, the technical development of fortifications to resist bombs of greater demolition capacities and the successively increasing dimensions of underground premises, required increased strength of overhead rockroom construction. In studies of how to meet these greater requirements it was determined through tests that by increasing the thickness of the overburden and using an inside lining of thin reinforced-concrete arches, satisfactory safety could be obtained even against very large bombs.

• **More cover provided**—Successive experiences with completed installations demonstrated also that by increasing the thickness of the overburden other construction advantages could be obtained. The upper part of the rock is usually weathered and fissured, but the quality improves generally with increasing depth. Therefore, it was found that, in installations with thick overburden, the better quality of the rock tends to lessen the amount of reinforcement that otherwise would be necessary as well as to reduce the danger of rock breaking away and falling down in the future.

These motives, in conjunction with the desire to increase the spans, rapidly led to rock overburdens of 12 to 15 meters in thickness. These thicknesses are presently considered to be desired minimum average values. However, at larger installations, efforts are always made to increase the thickness of the overburden as far as can be consistent with economy and function.

The value of the added protection obtained through the increased overburden usually compensates for the comparatively small additional costs caused by lowering the elevation of the installation a few meters. Tunnel spans of 15 to 20 meters are becoming increasingly common in Swedish rock installations, and rockrooms spanning close to 30 meters are presently under construction.

Various types of installations are now being built in rock, as was noted in the preceding article. Most of the earlier installations were built for military purposes. Examples are shelters in connection with battle stations and anti-aircraft control, protection of supplies and workshops, gasoline and oil depots, hangars and ship-tunnels. But the Civil Defense and the National Economical Defense also have built and continue in increased tempo to build shelters as well as storage premises. Some important war industries have workshops permanently located in rock, where production now continues during peace-time periods.

(*Continued on page 38*)

Cost of Rockrooms in Sweden

Total volume of installation (cubic meters)	Cost of blasting crowns per cu m. 1946-49	1950-51	Inside construction (Reinforced concrete) Crowns per cu. m. 1946-49	1950-51
10,000	47	40	63	71
20,000	40	33	58	66
40,000	34	28	51	59

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In the final product Ad-Aire provides a denser concrete that stands up better under freezing and thawing to resist scaling, spalling and cracking. It's a better concrete with finer texture and decreased permeability to water.

Usually One Ounce of Ad-Aire per sack of cement is needed. The cost is low.

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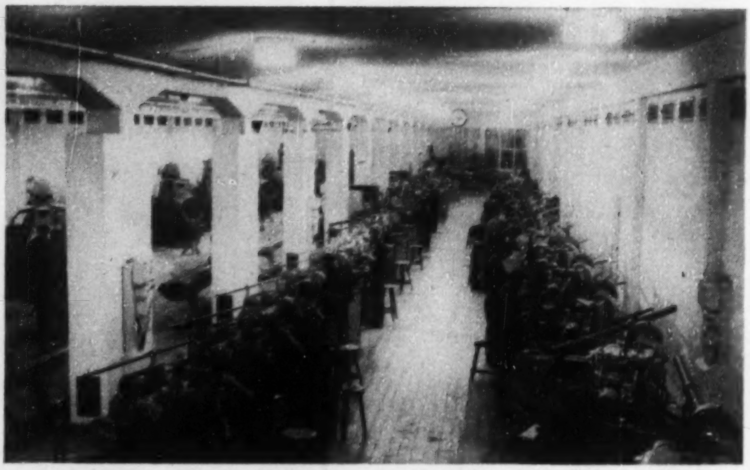

WORKSHOPS in the Bofors installation are concrete-lined rock chambers. Ample light and air-conditioning provide ideal working conditions.

SMOOTH TUNNEL ROOF obtained by careful rock excavation methods recently adopted. Spacing of the drill holes is about 2 ft.

The total investment to date for rockroom installation in Sweden probably amounts to nearly one billion crowns ($200 million).

• **Psychological factors**—During the past 10 years the several Swedish industries that have plants located in rock chambers have gained experience that will be of value in the future. Comfortable working conditions are very important. A rather pronounced—and understandable—aversion exists in some people against working "where they can see neither sun nor moon."

Rooms should be painted in light, cheerful colors. Ventilation and illumination problems must be carefully considered. All requirements, which are needed to give proper working areas, can usually be carried out without technical difficulties.

Access to well-planned and spacious meeting rooms also is of utmost importance. An advantageous arrangement would be to combine underground working quarters with recreation rooms and dining halls located on the ground surface, thus enabling those employed to spend some of their leisure time in the open air at meal periods.

Investigations carried out at various industrial plants have proved that work in well planned rockrooms in no particular way is detrimental to the health, but that nevertheless there are some individuals who insist that such work causes depression and tiredness. These reactions, however, generally can be traced to psychological factors.

At underground industrial plants where a matter-of-fact educational program is practiced, where proper social welfare is carried on and a high hygienic standard is maintained, no particular problems occur. Information received from some of the Swedish installations indicates that employes suffering from asthma or rheumatism actually benefit by the prevailing constant climatic conditions.

• **Rock costs reduced**—Modern highly mechanized blasting techniques have made rockblasting comparatively inexpensive. Among factors which have reduced the cost of rock excavation, attention is called to the use of hard metal rockdrills, improved drilling machines and short-delay blasting.

The cost of construction work inside the rockrooms, on the other hand, has increased, as is shown in the accompanying table.

• **Improved blasting methods sought**—In spite of considerable experience derived from construction of a great many rock installations, many problems remain unsolved whose solution probably would still further reduce the costs of new installations. Amongst those problems, special attention is called to the investigation of methods to produce a more accurate blasting of the rockroom contours, particularly the roof.

Tests have proved that by spacing the contour drill holes close together, and that by using blasting of low intensity in these holes, very smooth and crack-free surfaces can be obtained in gneiss and granite.

It is still impossible to define the optimum technical-economical procedure, but to an ever increasing extent the Swedish blasting specifications suggest a careful charging of explosives in the contour holes. Continued experimentation probably will be concentrated on the development of some low brisance explosive agent to be used at the contour holes, whose effect should in the least possible manner disturb the remaining rock. The further development of such blasting methods is also a link in the efforts to facilitate construction of rockrooms with greater spans.

A certain amount of unfortunate exploitation has occurred in Sweden. Favorably located, good-quality rock bodies have already been used for underground plants, but too often for poorly planned and inadequate installations of small spans. As a result, it is not unusual that new installations being made today must be located in rather bad quality rock, necessitating a certain amount of additional reinforcement. However, even under these adverse conditions, the cost for the reinforced construction can be kept reasonably low, and good installations can be obtained as a result of presently used drilling and blasting methods, which to a noticeable degree reduce disturbances of the rock outside the intended cut.

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Breaking Chicago's Bottleneck with a BLAW-KNOX BITUMINOUS PAVER ON WHEELS!

● Chicago and the Cook County Highway Department had a date! Dec. 1st had to see the completion of the last section of the North Side Outer Drive. Standard Paving Co. of Chicago had the contract. The job was two lanes, 48-ft. wide and over half a mile long. After seeing the Blaw-Knox Paver on a few hours' work they bought the machine and finished the job in 13 days in spite of several days of bad weather.

The pavement was 3 courses of I-11 — two base courses 1½" thick and a finish course 1½" thick. All courses were 12 ft. wide. The machine operated at 24 ft. a minute and handled 15 ton trucks. Output was materially reduced because of the long haul (12 miles) from the plant, but in spite of weather and haul the entire job including lighting will be completed long before the penalty date.

You can make money by paving on wheels!

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FOOTE CONSTRUCTION EQUIPMENT DIVISION
1922 STATE STREET
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- ✓ **Eliminates the 500 to 600 parts characteristic of crawlers.**
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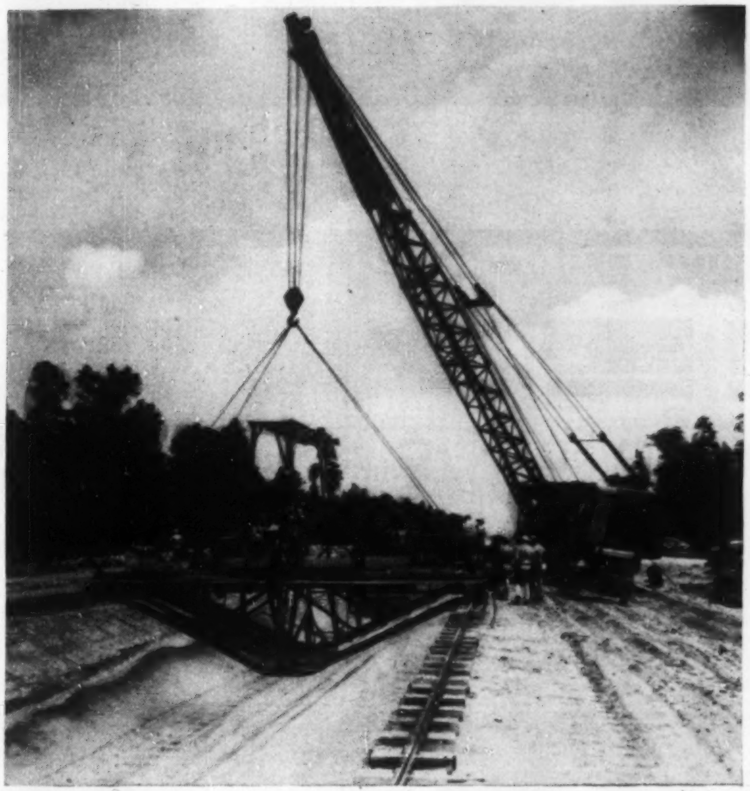
- ✓ **Conversion for increased width is easy and fast.**
- ✓ **Works close to curb.**
- ✓ **A sturdy frame you won't have to rebuild.**
- ✓ **The only floating screed paver with positive traction at *all* times.**



WIRE UNREELING RIG is lowered onto tracks by crane. It is self-propelled.

Rig Unreels Wire Mesh Ahead of Canal Paver

A new entry joined the usual parade of construction equipment on the recently completed water supply canal, linking reservoir and treatment plant for Houston, Tex. Into the dozer-dragline-trimmer-paver-finisher sequence went a machine devised by contractors Brown and Root, Inc., to unreel steel welded wire fabric reinforcing for the canal's concrete lining.

Production-line technique finished the 13-mile canal, with its 2,250,000 million sq ft of 4-in. pavement, months ahead of schedule under a $3.2 million contract.

- First came the heavy duty bulldozer to cut down slopes of an existing unlined canal roughly to new grade.

- Second came the dragline to clean loose dirt from the 32-ft wide cut.

- Then, rails went down on either side of the cut to carry the familiar canal-lining machinery.

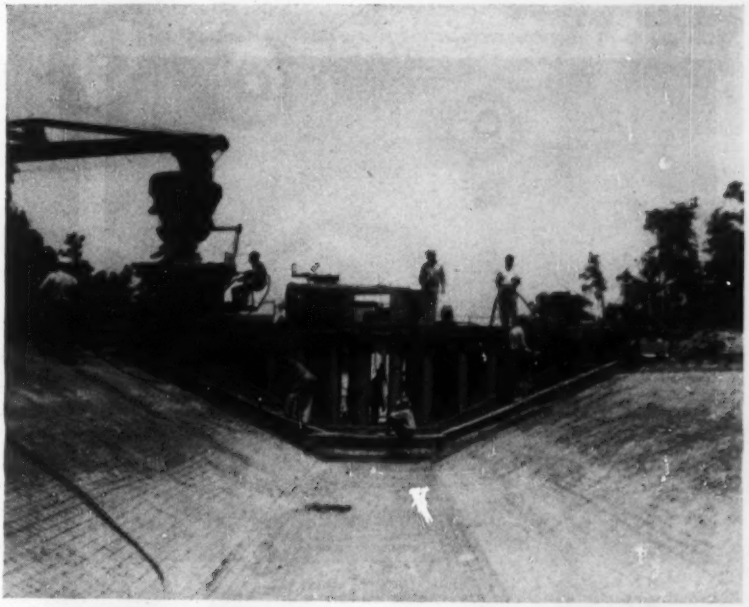
- Third pass at the canal was made by a rail-riding trimming machine, its blades set to exact grade and shape of the cut. The 6-ft wide flat bottom and approximately 2 to 1 side slopes of the trapazoidal section were shaved smooth.

- Fourth machine to roll down the line was Brown and Root's newly devised reel carriage from which the reinforcing fabric was placed. As the wire mesh unreeled in strips (12 gage wire at 4x4 in. spacing) it was overlapped for continuity and tied together by men following the self-propelled unreeling rig.

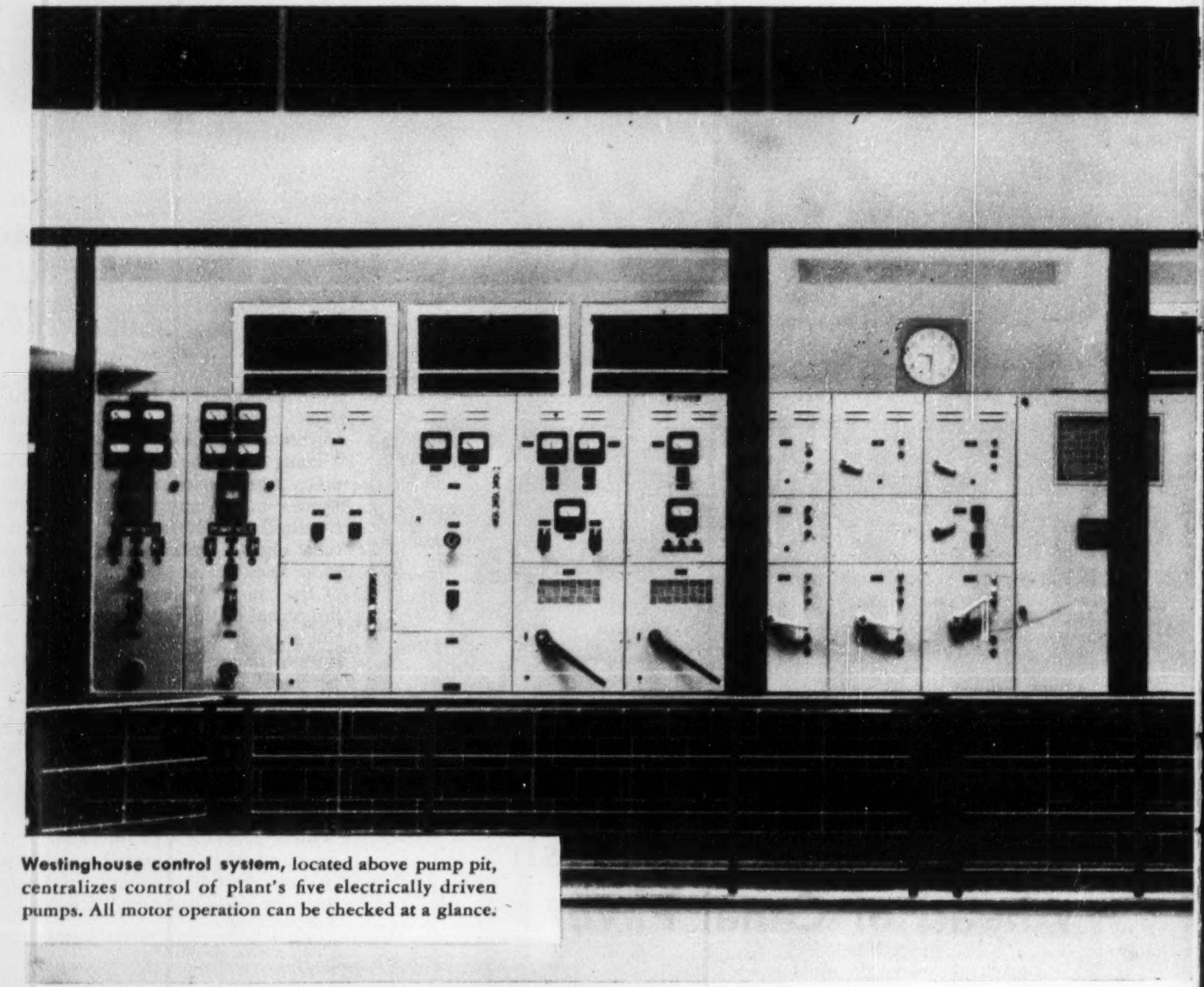
- Next came the big slip-form machine, pouring up to 1,570 linear feet of concrete canal pavement in a day. Moving along the rails under its own power, this machine took concrete from a mixer moving alongside, distributed it to downspouts across the canal's width and poured it to uniform thickness on bottom and sides of the canal. Men riding a platform just ahead of the down-spouts hooked the reinforcing fabric and pulled it up into proper position in the poured pavement. Some 400 tons of steel went into the concrete as reinforcing.

Final machine to make the run was a finishing unit which smoothed the canal lining to insure its capacity to carry 150 mgd of needed water for Houston.

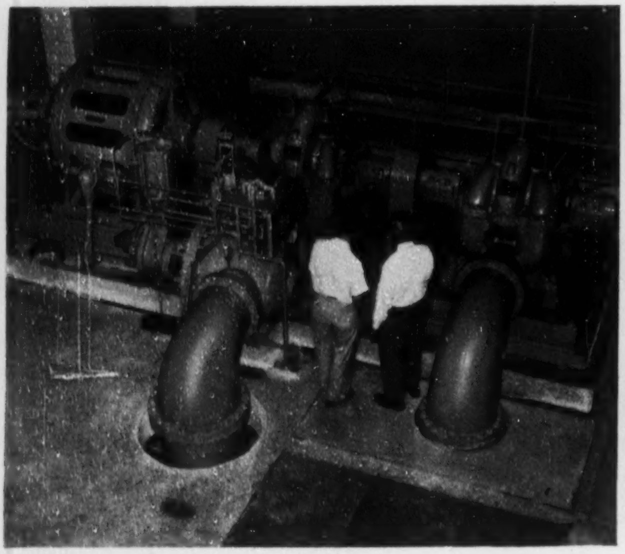
General features of this water supply canal and the overall water supply and treatment project for Houston were described in ENR Sept. 10, 1953, p. 51.



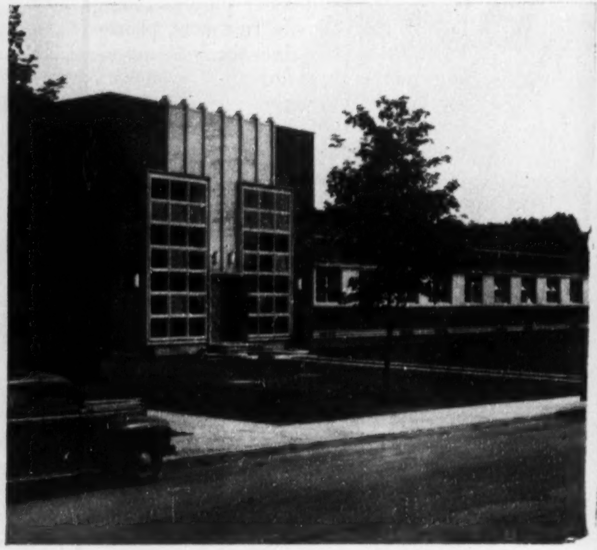
CANAL PAVING MACHINE used had been designed and built by Gunnert and Zimmerman, Stockton, Calif., canal specialists.



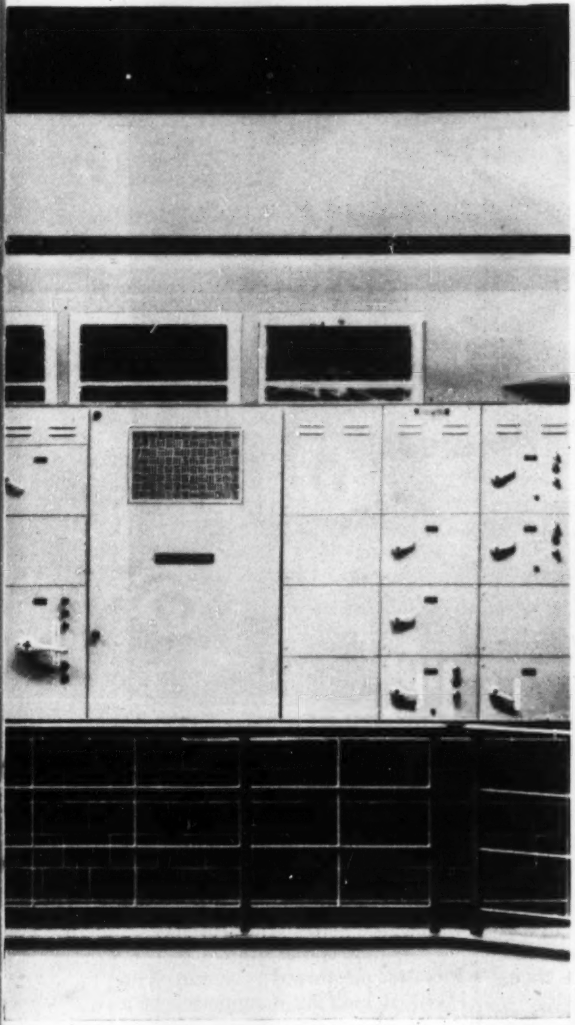
Westinghouse control system, located above pump pit, centralizes control of plant's five electrically driven pumps. All motor operation can be checked at a glance.

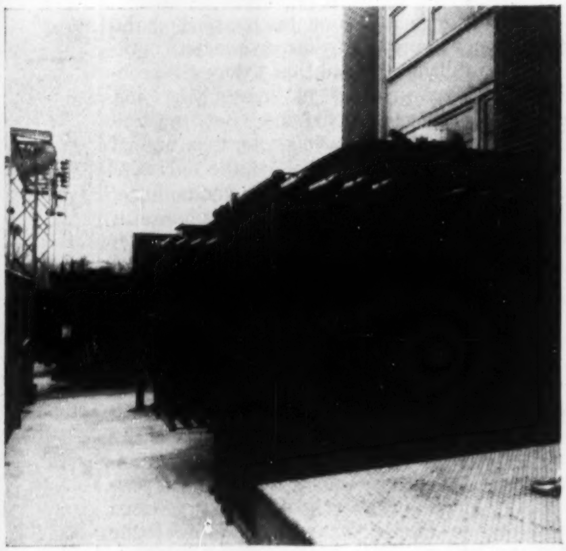


Westinghouse synchronous motor (2400 volts, 900 horsepower) operates one of the three 15-mgd electrically driven pumps at the three-million-dollar plant.



New 20-mgd filtration plant, Allentown, Pa. Consulting Engrs., Morris Knowles, Inc.; Electrical Contractor, Dravo Company—both of Pittsburgh, Pennsylvania.





Westinghouse power transformers (12,000 to 2400 volts) furnish the filtration plant's entire power supply. Left background: part of Westinghouse outdoor substation.

Allentown's outstanding filter plant has a centralized pump control system

The new 20-mgd filtration plant at Allentown, Pa., has stimulated considerable interest throughout the waterworks field. This outstanding installation doubles the available water supply and is expected to meet the city's needs for the next 30 years.

From planning stages through installation of equipment, Westinghouse teams worked closely with the consulting engineers. They helped design the electrical system. They matched it with coordinated products that met the plant's rigid requirements for attractiveness, efficiency and simplified maintenance.

How well these were carried out is reflected in the Westinghouse pump control system. Its many switching and control units blend in height and appearance due to their modular construction. Efficiency is assured since the system centralized in one location operation of the plant's pumps. And maintenance is simplified. By being mounted in one line, all units are easily accessible from the front of the board.

This is another example of Westinghouse engineering and product services—ranging from electrical system planning help through design and application of equipment to meet any power problem . . . in any industry.

One call to your nearby Westinghouse Office brings this complete service to you, your engineers and contractors. Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pa. J-94021

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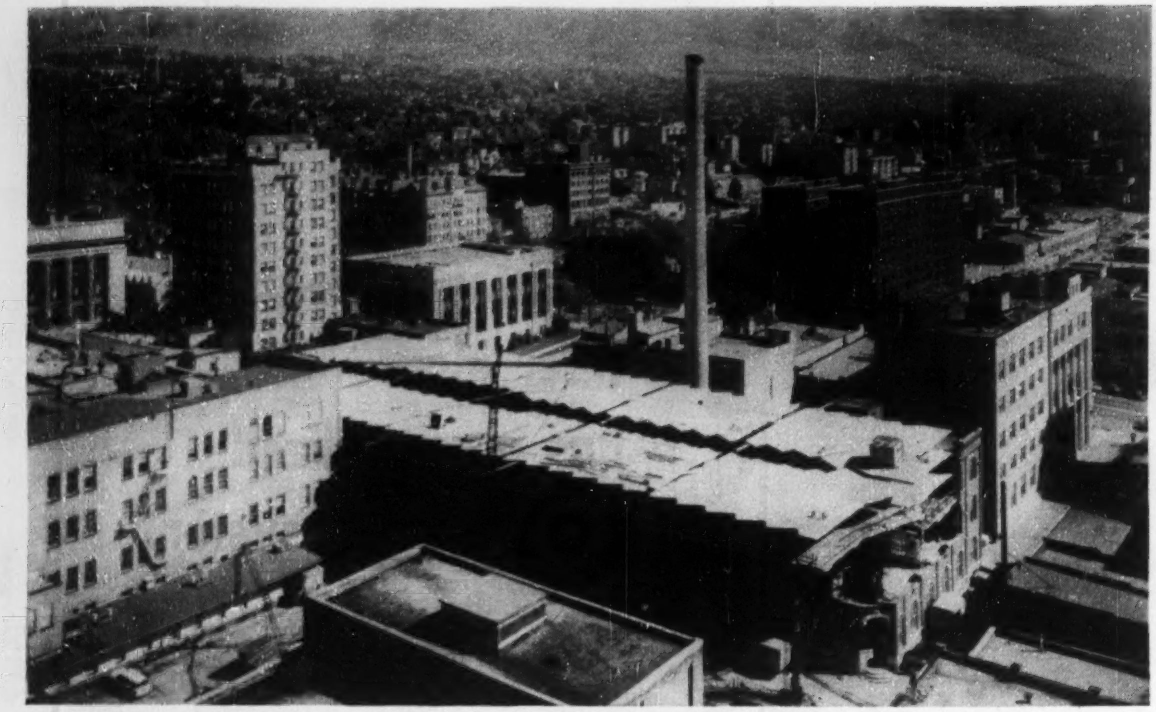


MID-BLOCK LOCATION forces unusual construction procedures in order to provide least interference for service traffic.

Wall-less Garage Built From Top Down

Precast, prestressed concrete columns resist seismic and vertical loads in Salt Lake City structure

There were unusual site requirements that complicated design and construction of a 542-car parking garage now nearing completion for the ZCMI department store in Salt Lake City: The garage is located in the center of one of Salt Lake's huge downtown city blocks—an area that had to be kept usable during and after construction for truck access to the store; part of the area was occupied by vital service buildings that also had to remain in operation.

As a result, normal procedures were modified to include:

- Precast concrete columns, 52 ft long, that were prestressed in order to reduce weight and to resist horizontal forces.
- A slab casting sequence that started at the top floor, after which the steel and timber forms were winched down for positioning on the four remaining floors.

The columns were designed to span the 20 ft from ground level to the first floor with no walls. The upper floors are also without walls, since the columns are strong enough to resist horizontal forces, and in addition, the needs of a parking building do not necessarily include walls.

• **Big one**—The garage is said to be the largest parking garage in the U. S. that permits customers to park their own cars.

A two-lane approach ramp takes parkers directly to first-floor level, which because of need for continued truck access to the store, is 20 ft above ground level. Floors are 8 ft apart, each floor divided longitudinally with the east half being 4 ft higher than the west half to permit use of ramps from half-level to half-level.

The up-ramp group circles the southern ⅗ths of the building and the down-ramp group the northern ⅖ths. Traffic flow is arranged in a counterclockwise pattern to minimize interference and confusion.

Customers can walk from their cars directly to the ZCMI (Zion's Cooperative Mercantile Institute) store from three of the five garage levels, since there are two floors in the garage for each floor in the store. Thus, the first, third and fifth garage levels correspond with the second, third and fourth floors in the store.

Elevator service is available in the store or by a new elevator system that is being constructed in connection with the garage.

The entrance ramp is panel-heated against icing. Ramps between adjacent floors in the garage are covered with an asphalt-impregnated burlap surfacing for better skid resistance.

• **Precast, prestressed columns**—The 115x300-ft building is supported by a total of 40 precast columns, most of which are 52 ft high.

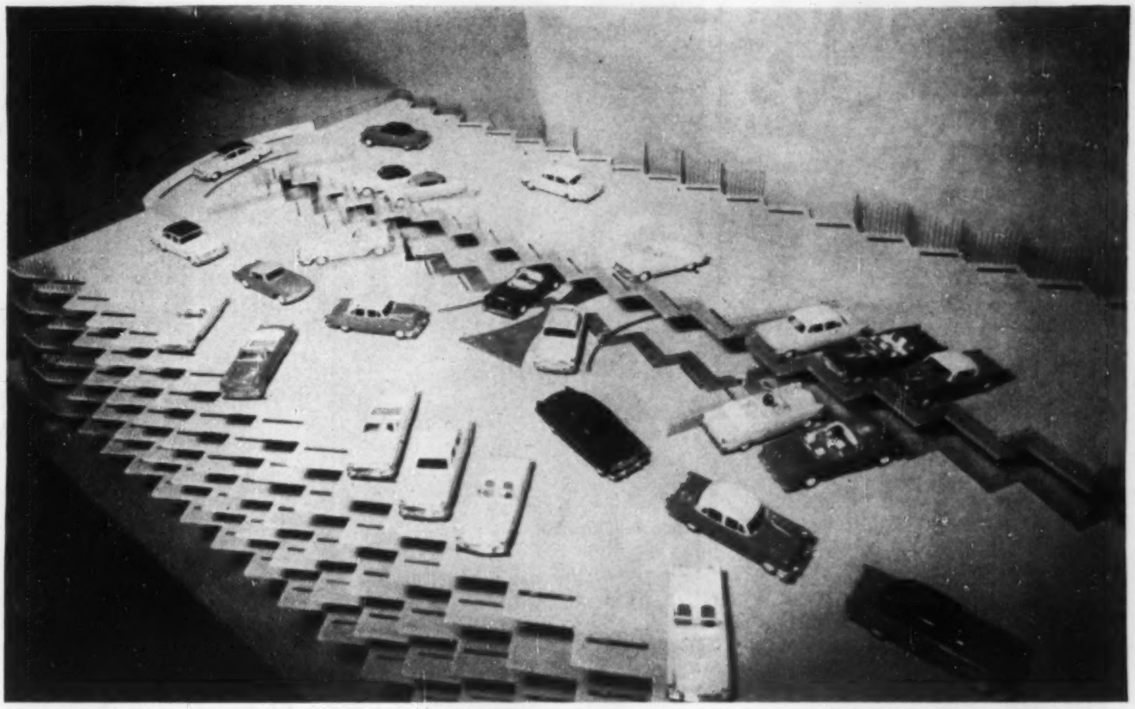
Primary reason for prestressing the columns was to increase the strength-weight ratio and thus reduce the problems involved in transporting and placing the columns. But the columns had to have greater than normal strength since they are the only seismic resisting elements in the building.

The top 32 ft of the columns is 4 ft wide and 10 in. thick and includes 10 prestressing cable assemblies having 7 wires of 0.25-in. dia each.

The bottom 20 ft of the columns—up to first floor level—is heavier, due to the greater unsupported length. This portion is 4 ft wide by 18 in. thick and includes an additional 10 prestressing cables.

All prestressing tendons are anchored with pressed-on heads in a one-inch-thick base plate that is recessed to receive the button heads of the wires. All tendons were pulled from the upper end after the 5,000-psi concrete reached full strength.

At each floor level there is a pro-



SELF-PARKING made easy. Floors are split longitudinally with sets of connecting ramps to separate incoming and outgoing traffic.

jection to provide additional slab support. The slab reinforcing-bar pattern is continuous through the columns. Dowels were cast into the columns and later welded to the floor-slab steel.

Eleven of the 40 columns had to be placed through holes in the roofs of existing buildings, on previously cast footings. The underlying material is an almost perfectly graded alluvial rock that was considered good for 6,500 psi dead load and for 10,000 psi dead plus live load including earthquake load.

Some of the footings in the existing buildings had to be substantially above ground level. The footings were designed so that, together with the superimposed columns, the same stiffness would result as for an ordinary column-footing assembly. Uniform stiffness is important in assuring that the columns are subject to equal lateral load—usually assumed to be distributed in proportion to relative rigidity of vertical resisting elements.

The columns were trucked the 17 blocks from the contractor's casting yard to the job site, on low-bed trailers with special police escort.

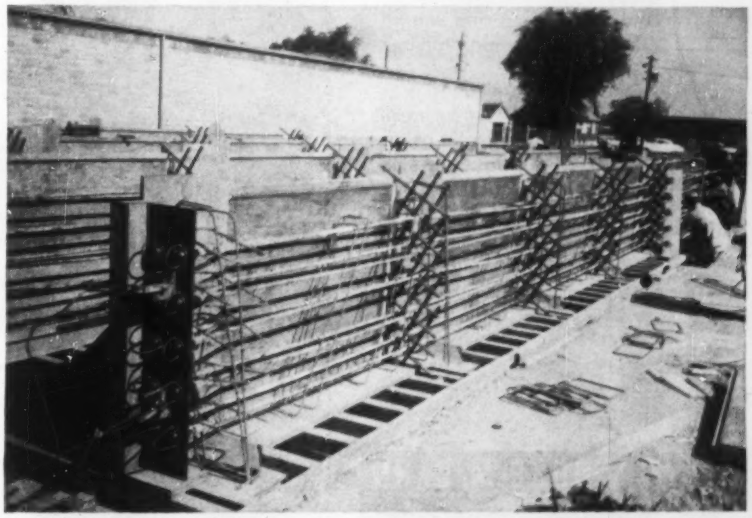
Two 20-ton cranes working through a spreader beam were used to lift and position the 15-ton columns at the job site. A steel plate cast in the top of the column made provision for a two-point lift.

As soon as the columns were in place they were braced with timber and steel-rod frames. These frames aided in plumbing the columns (although the workmanship was so good that the most any one column was out of plumb was 1¼-in.). They also served to assure stability of the building during the casting of the upper two floors.

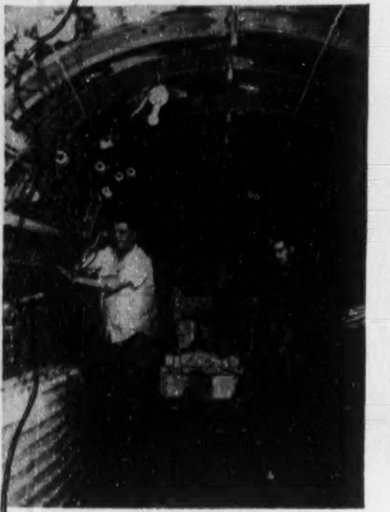
• Forms move down—Floor slab casting started at 5th floor level. Slabs were cast in four-column bays with the panels about 55 ft square. Adjacent panels were separated by an opening of about 3 ft that was concreted after form stripping.

Concrete was pumped into place, mixing being done at ground level. After the concrete had reached adequate strength, the forms were winched down to the next floor level. Eight manually operated winches—two on each column—lowered the forms. Pull on each winch was about 75 lb. Total time to lower a floor panel and position it for the subsequent pour

(*Continued on page 46*)



PRESTRESSED COLUMNS are 52 ft long, include 10 prestressing cables for full height and 10 more up to first floor level.



Sound powered TELEPHONES

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For temporary use on construction work, these instruments move with the job as it progresses. Also for permanent installation on industrial projects. Indoor or outdoor models in selective or common ringing and semi-selective or common talking.

Positive communication is assured at all times because no batteries or current of any kind are required. Cost of upkeep is negligible.

Photo shows Model "K" Phone in use on Niagara River project. General Contractors, Herbert F. Darling, Williamsville, N. Y.

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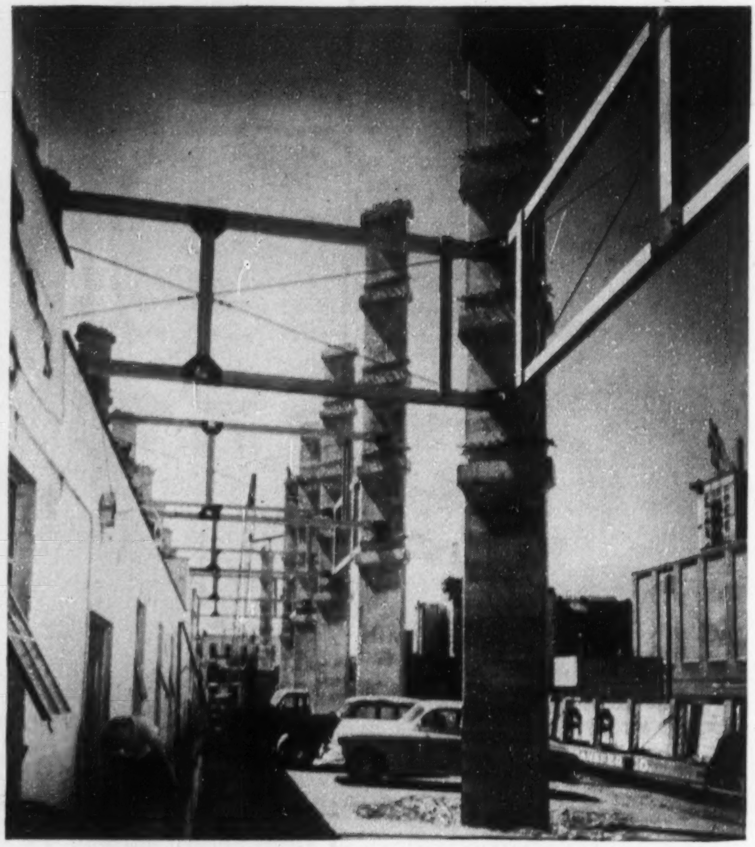
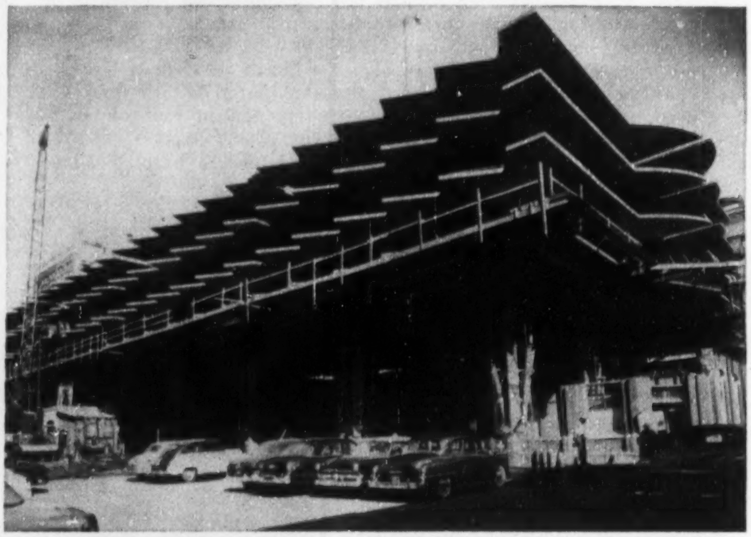


COLUMNS ARE BRACED laterally pending construction of top floors.



FLOOR SLAB FORMS are re-used for each of the five floors. Top slab was cast first and forms winched down to next position.

was about ½ hour. Following this procedure the contractor was able to pour an average of nearly two panels a day.

• **Slab design**—Slab design was made complex because the columns were positioned at 60-deg angles to minimize interference with the parking pattern. Slab thickness is 7 in., but included is a tapered haunch 18 ft square. Thickness increases to 14 in. for a 5-ft square around the columns.

A model analysis made by Presan

Corp. of Los Angeles aided slab design. In addition to the complications developed by the column orientation and the heavy haunch, the design had to consider the floor for both construction and finished conditions: During construction there were extensive cantilever elements, but after gaps between form panels were closed, the slab became continuous. The model analysis facilitated this design, and gave the qualitative effect of the 5% seismic load.

Another application of the model analysis was in slab form design.

The forms were designed as carefully as the building to minimize deflection during construction operations. Included in design considerations was the elastic deformation of the slab plus the plastic deformation of the concrete and the deflection of the forms under the weight of the wet concrete. Elastic deformation of the slab came from the model analysis.

Each form panel is supported by four 18-in., 50-lb wide-flange beams in the east-west direction. Across these are five 15-in., 42.9-lb I-beams in the north-south direction. And there are additional steel or wood cross beams supporting the 2x10 joists at 2-ft centers. The forms are faced with ¾-in. plywood sheathing. The plywood was coated with a plastic paint before the first use and thoroughly cleaned without recoating after each subsequent use.

The slab concrete has 4,000 psi strength and includes an air-entraining admixture. Purpose of the air entrainment is to resist spalling due to use of salts on Salt Lake City streets during winter ice conditions.

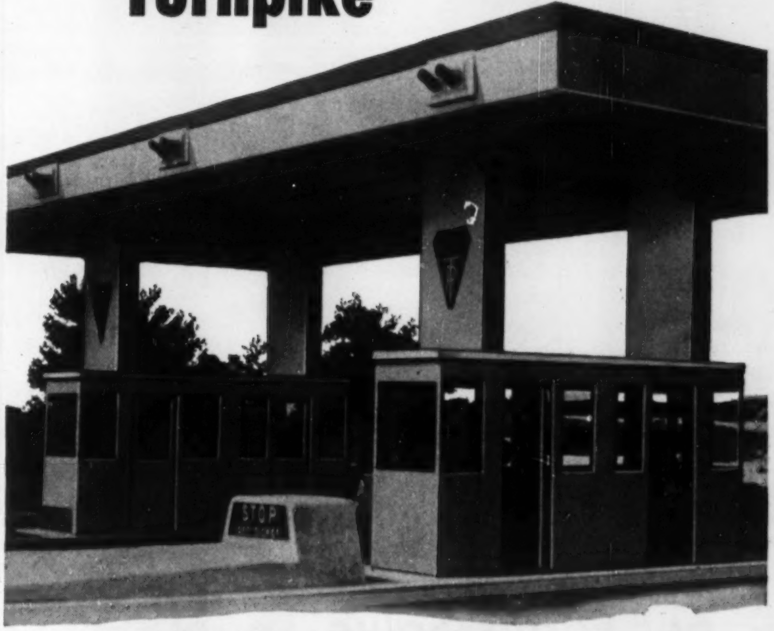
The $1-million building was designed for the department store by Bowen, Rule & Bowen, consulting engineers of Los Angeles. Contractor on the work is Jacobson Construction Co. of Salt Lake City.

Joint Construction Agency Gets New Deputy Director

Brig. Gen. Herbert W. Ehrgott, USAF, has been appointed deputy director of the Joint Construction Agency, U. S. European Command. He has been serving as deputy to the Assistant Chief of Staff, Installations, U. S. Air Force headquarters in Washington.

Highlights of his military career include service as an observer with British forces during the Middle East campaigns of 1941-2; engineer, Ninth Air Force; Chief of Staff, Ninth Air Force; Chief of Staff, Ninth Engineer Command (which constructed most USAAF airfields in northern Europe during the war); and commander of Aviation Engineer Force, U. S. A. F.

on the West Virginia Turnpike



TALLER & COOPER BOOTHS safeguard personnel as they serve the public

Weatherproof, accident-proof all steel Taller & Cooper Booths assure safety and comfort for personnel on the West Virginia Turnpike, as they do at parks, parking lots and toll facilities all over the country.

Functionally designed and pre-fabricated, Taller & Cooper Self-Contained Booths are installed in a matter of hours, eliminating long weeks of on-the-site construction. With over 20 years of know-how in the design and manufacture of toll equipment, Taller & Cooper can give you superior custom-planning on any facility you are planning to build or modernize. Call on the nation's first choice . . . Taller & Cooper.

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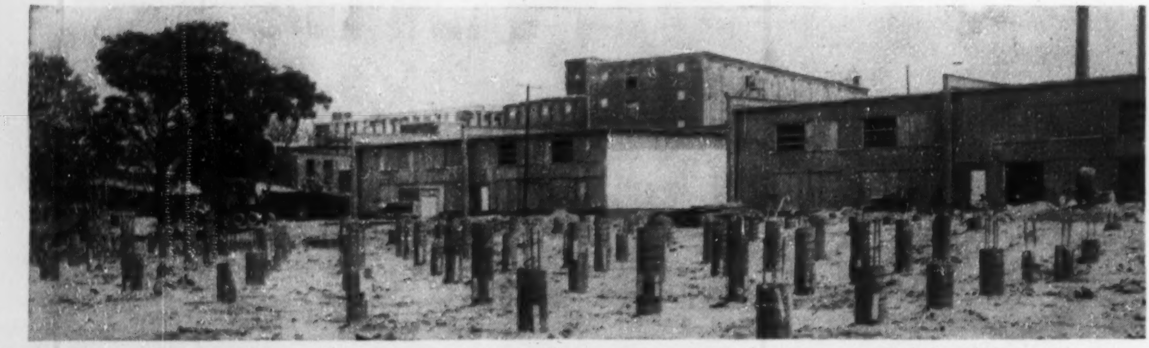


SITE for warehouses was a fill with high water table in which concrete piers had to be constructed, founded on rock.

HOLE BORER drilled to rock, a paper form was inserted and concrete placed in the tube immediately. But there still were a few problems to be solved.

BUCKET was sometimes needed for additional excavation from the form.

Paper Forms Solve Tough Foundation Problem

E. L. Scruggs
Vice President and Chief Engineer
The Springs Cotton Mills
Lancaster, S. C.

The site was a fill. The water table was within 4 ft of grade; so the entire area was unstable. But 10 to 15 ft below grade was a good rock stratum. How could reinforced concrete footings for heavily loaded buildings be constructed through the overlying muck and to the rock with the least expense?

That was the problem the engineering department of The Springs Cotton Mills was faced with in planning two 2-story warehouses in Lancaster, S. C. Of flat-slab construction, the buildings were designed for a 200-psf load.

The site—adjacent to a creek—had been used as a dumping ground for years. It was not suitable for installation of conventional piles, since they would be of insufficient length, and lack any skin friction. An open-ended pipe pile was considered; but the cost was excessive.

The solution was to use a hole-boring machine with a 20-in.-dia auger to excavate to rock, then quickly drop a 16-in.-dia heavy-paper form into the hole before mud seeped into it.

Of course, water rose quite rapidly in the tube. However, in most cases there was no particular difficulty in pumping out the tube, placing a prefabricated reinforcing cage in it and following immediately with a dry concrete, well vibrated.

• **Difficulties eliminated**—It was found that the bottom of the tube would disintegrate under water if left standing too long. Therefore, a collar of lightweight metal was fabricated and placed on the bottom of the tube. Also, the first 4 or 5 ft were treated with bitumastic, which would allow the tube to stand in water for a considerable length of time in good condition.

In one area, adjacent to the creek, it was found that the mud could not be kept out of the holes long enough to place the paper form. In these few holes, a special pipe was fabricated of 10-ga metal, spot-welded, dropped into the hole and driven to rock with a sheeting hammer. The metal pipe was made just long enough to come to ground level, and to it was spliced the paper form for the upper portion of the concrete column that was required to reach final grade.

Since the site had been used as a dumping ground, a great deal of debris was encountered. It was necessary to use a small orange-peel bucket, manually operated, to remove this material from some of the shells.

There was no waste of form material. The tubes were bought in 18-ft lengths and cut off at the desired levels. The remainder was re-used by splicing on to a shorter section elsewhere.

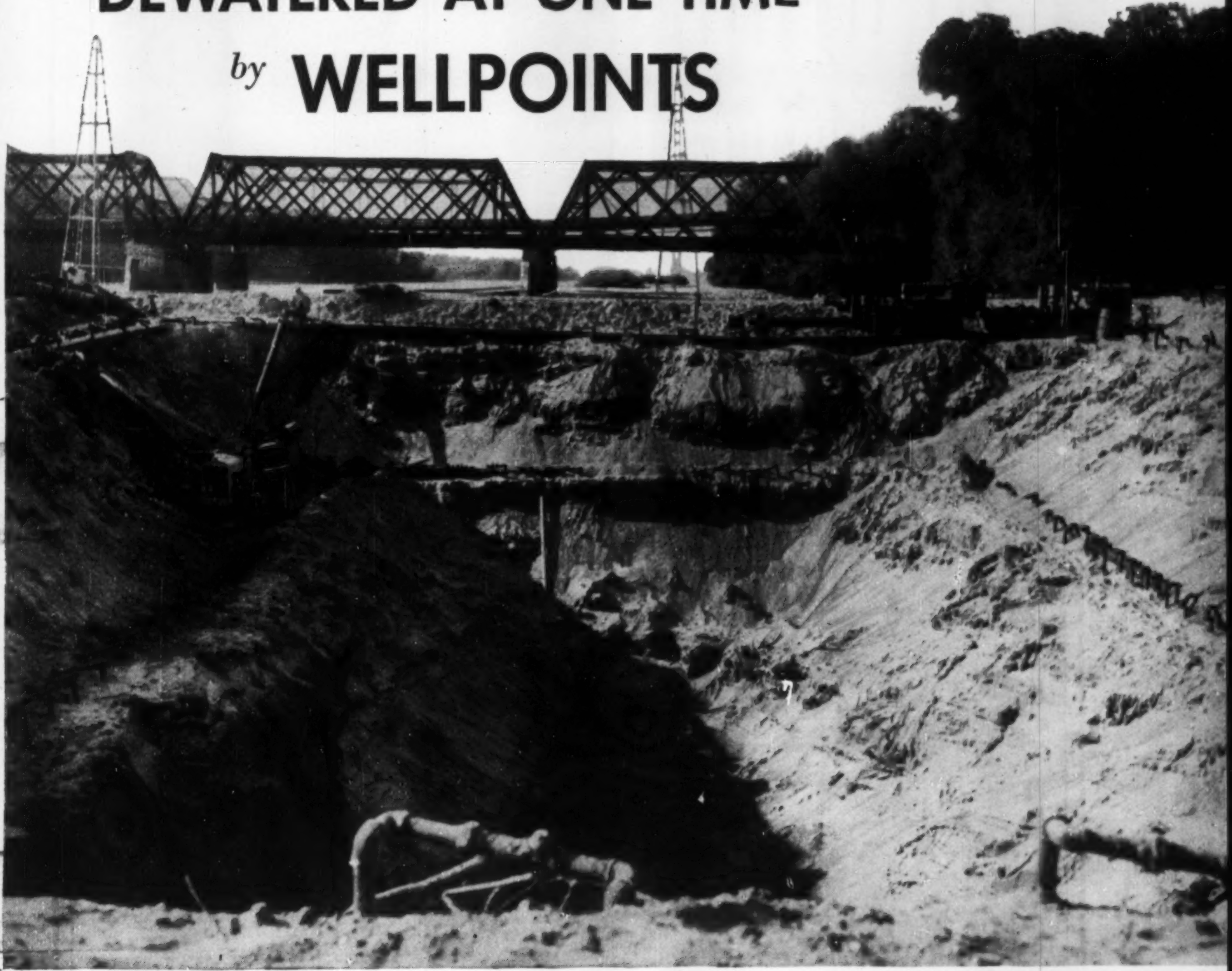
More than 200 footings were placed in about six weeks at a low labor cost. We consider this method to be very economical where soil conditions warrant this type of construction.

Foundation plans were worked out and foundations placed by the engineering department of The Springs Cotton Mills. The flat-slab construction and structural plans for the warehouses were prepared by J. N. Pease & Co. of Charlotte, N. C. The paper forms are manufactured by the Sonoco Products Co., Hartsville, S. C.

Seven deep bridge piers 100 ft. apart

DEWATERED AT ONE TIME

by WELLPOINTS



Contractor for the substructure: McCarthy Improvement Co., Davenport, I

This is Pier #4, one of seven being constructed for the new Clinton-Illinois Mississippi River Bridge. A Moretrench Wellpoint System pumped 25′ of water out of this hole leaving it safe and dry for pile driving operations. No sheeting was needed. A common suction line linking each pier eliminated several pumps.

Expert planning, careful installation and supervision of the pumping system insured progress on this job *right from the start.*

For full details on how to work economically in the dry, contact our nearest office.

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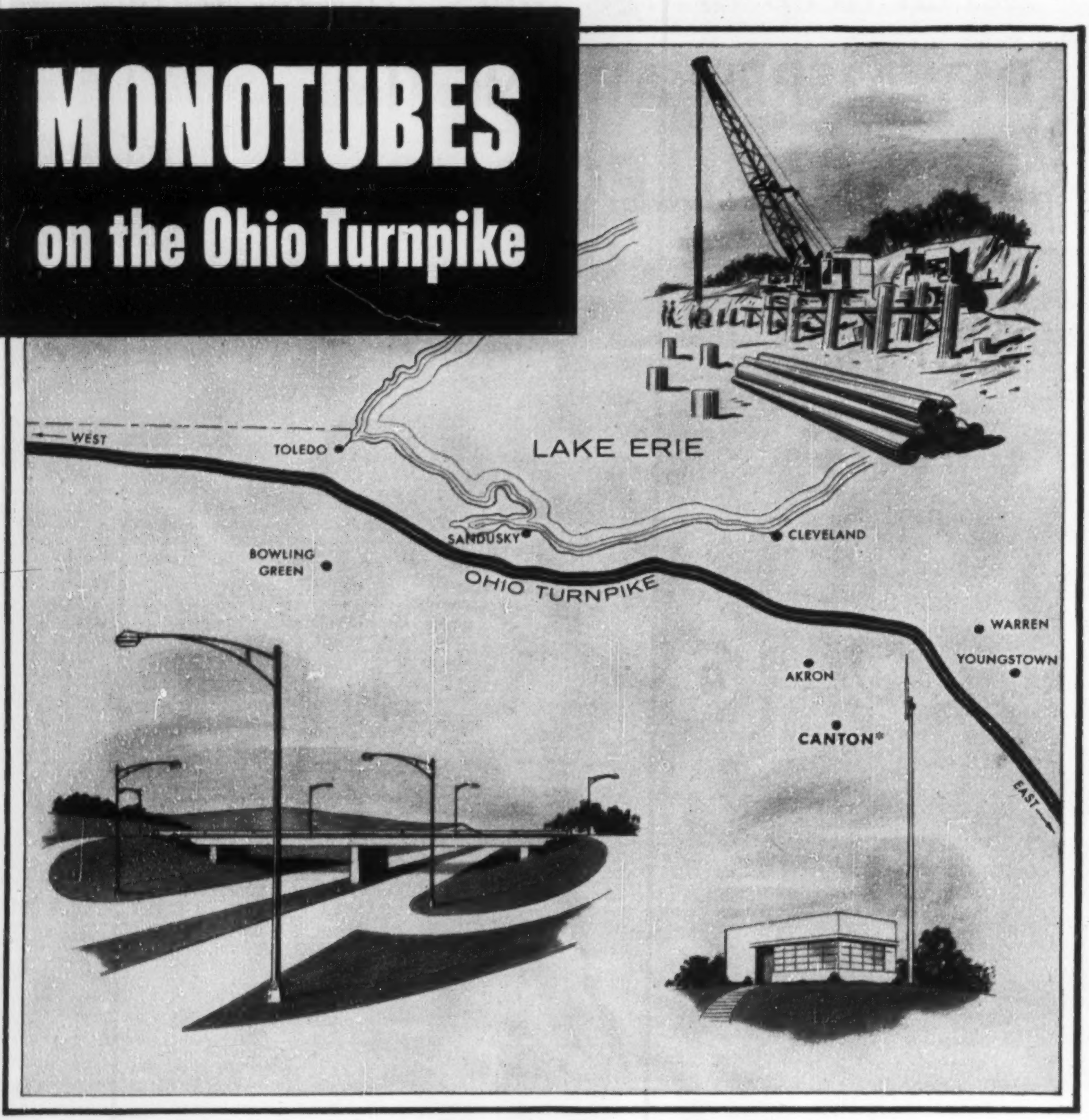
MONOTUBES
on the Ohio Turnpike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ALL along the 241-mile Ohio Turnpike you'll find steel Monotubes—1,322 Monotube lighting poles for entrance plazas and interchanges, 44½ miles of Monotube foundation piles for structures, and self-supporting Monotube antenna masts at each of the 15 interchanges and the two terminal gateways for radio communication.

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Monotube Lighting Poles
Monotube Foundation Piles
Monotube Antenna Masts

UNION METAL

MEN AND JOBS

Col. William F. Cassidy Gets South Pacific post

Col. William F. Cassidy has been appointed by the Corps of Engineers as South Pacific division engineer, with headquarters in San Francisco.

He succeeds Col. Paul D. Berrigan, who is being transferred to the Far East Command. The reassignments become effective this month.

Cassidy was named Berrigan's assistant last August after completing a year's work at the National War College.

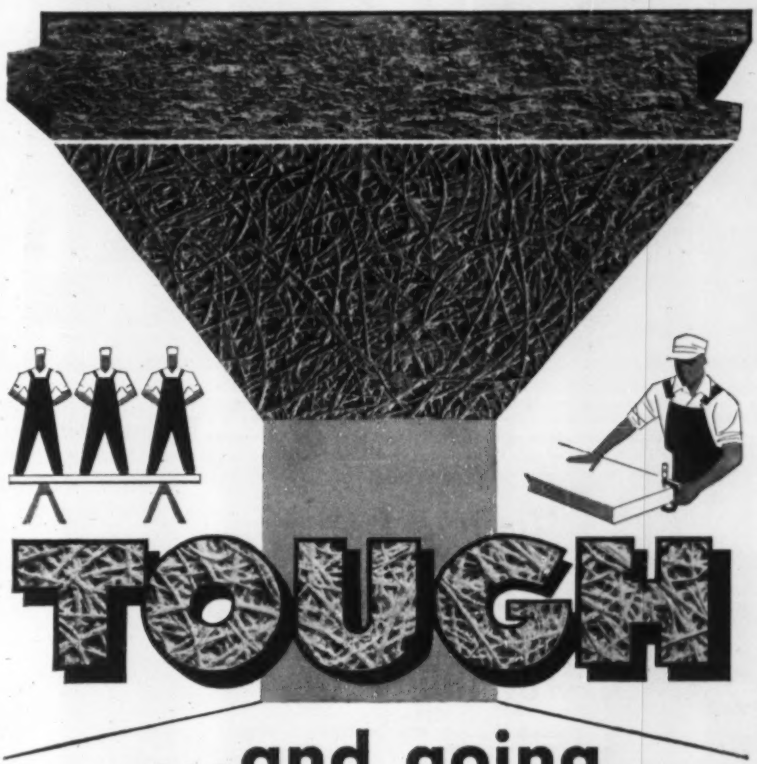
A graduate of the U.S. Military Academy, (1931), he received his master's degree from the University of Iowa in 1934, and is a graduate of the Engineer School, Fort Belvoir.

Cassidy's previous duty includes two years as assistant to the district engineer, Portland, Ore.; two years with the 3rd Engineers in Hawaii; three years as deputy to the president of the Mississippi River Commission and to the division engineer of the Lower Mississippi Valley Division at Vicksburg, Miss.

In World War II, Cassidy commanded the 816th Engineer Aviation Battalion and the 21st Engineer Aviation Regiment. He was also assigned to the War Plans Division Office of the Chief of Engineers.

When the emergency arose in Korea, Col. Cassidy was sent to the Far Eastern Command. There, he served for three years as Chief, Supply Division, Engineer Section, Japan Logistic Command, and later became executive officer, Engineer Section, General Headquarters, Army Forces, Far East.

(Continued on page 52)



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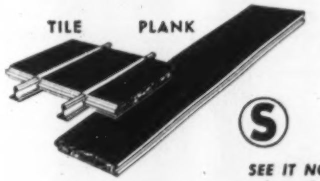
Roof Decks of Tectum® plank or tile "hang together" even when overloaded to the point of rupture. Its toughness prevents sudden breaks — assures reliable structural safety. Nailed, clipped or grouted Tectum Decks carry roof loads of 200 psf and more on economical spans. Wood fibers mesh and intermingle in Tectum, eliminate direct stress at any point. Maximum stability results. Laboratory tests established an average dimensional change of only 15/100 of 1% at 98% R.H

Only Tectum combines structural strength and dimensional stability with 7 other distinct qualities in single-layer, job proven roof decks: insulative, acoustical, textural, noncombustible, low cost, lightweight and termite and fungus proof.



SEE IT NOW! Ask for sample and catalog or refer to Section Te/2e, Sweet's Architectural File.

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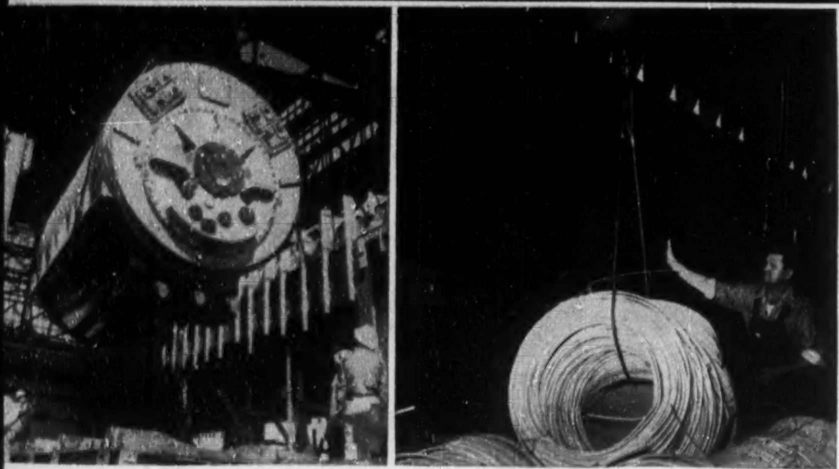


Multiple-part Red-Strand Slings handle heaviest loads, and are easy to apply to both the load and the crane hook. User tests in Detroit proved Red-Strand slings withstood unusual abuse, yet maintained higher-than-rated strength. A Gary plant uses Red-Strand single-part slings for many lifting jobs like this. These slings are available with various combinations of end fittings for attaching the sling to rings or lugs.

How to Select the Correct Sling for Your Job

Start your sling selection by analyzing five factors:

1. The load—its size, weight, shape, finish.
2. Working area, amount of head room.
3. Size and type of crane hook.
4. Angle of sling legs.
5. Location and type of lugs or rings, if any.

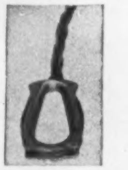
From this information your supplier can recommend the sling by type, size and length that is safest, longest lasting and most economical for your job.

Types of Slings

Multiple-part slings are always recommended for heavy duty service, because for equal strength they are far more flexible than single-part slings. They hug the shape of the load easily, present a greater bearing surface to the load, and reduce the possibility of marring surfaces.

Where these factors are not so important, either Red-Strand *single-part slings* or *grommet slings* may be used for economy. Single-part Red-Strand slings are often recommended for lifting lighter weight objects, or those that have fixed attaching rings or lugs. Grommet, or continuous strand Red-Strand slings are ideal for forming hitches of various types without fittings.

A heavy cylindrical load usually calls for multiple-part Red-Strand Flat-Laced slings. They are strong, flexible and do not slip or abrade.



When you re-use Pin-Lock thimbles you reduce sling costs by 21%

Extra Savings

Two suggestions will help you save money on slings.

The first is to re-use Pin-Lock thimbles on multiple part slings. These exclusive Leschen Pin-Lock thimbles cut sling costs on an average of 21% because they may be used again and again. They lock into sling loops with pins instead of permanent clamps, permitting re-use, and eliminating constant expense of thimble replacements.

The second suggestion is to use Red-Strand slings because they are made of *higher-than-rated* quality Leschen wire rope that delivers *longer-than-expected* service.

Get a copy of Leschen's *Sling Handbook* for complete information. Ask your Leschen man for one, or write.

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MEN AND JOBS

Smoke Control Engineer Resigns at Columbus

Harry C. Ballman has resigned as chief smoke regulation engineer for Columbus, Ohio, and will remain in Pittsburgh with the Mellon Institute, where he has been on leave of absence for several months.

As senior fellow in Mellon's air pollution control program and as executive secretary of the Air Pollution Control Association, Ballman will continue to coordinate the efforts of various groups in his field.

He had been with Columbus since early 1950 and was largely responsible for the national recognition which the city obtained for its progress in smoke regulation.

Shift District, Fort Belvoir Army Engineer Officers

Brig. Gen. Louis W. Prentiss, engineer commissioner of the District of Columbia since January 1953, has been named to command The Engineer Center, Fort Belvoir, Va. He will take over his new assignment on Dec. 10.

His successor in Washington will be Col. Thomas A. Lane, Army Field Forces engineer at Fort Monroe, Va.

A graduate of the Colorado School of Mines, Gen. Prentiss was commissioned in the Army in 1921 and has been with the Corps of Engineers since 1929. He was stationed at Fort Belvoir's Engineer Replacement Center for three years during World War II and was serving in the European Theater of Operations when the war ended.

Subsequent posts included district engineer, Omaha; southwestern division engineer, Dallas; and Assistant Chief of Engineers for Personnel and Administration.

Col. Lane was commissioned in the Corps of Engineers in 1928, following his graduation from West Point. He is also a civil engineering graduate of MIT and a graduate of the National War College in Washington.

Men and Jobs Briefs . . .

• **Careers**—Iowa Highway Commission names **Neil Welden** bridge engineer to succeed **E. W. Blumenschein,** who becomes associate engineer . . . **Lewis A. Stanley** becomes Oregon state engineer —he's been with the engineering department 15 years . . . **A. D. Sidio,** Wyoming's public health engineer, moves to Pueblo, Colo., as sanitation director.

(Continued on page 54)

Leakproof and Rootproof for the Life of the Line

Universal TYLOX

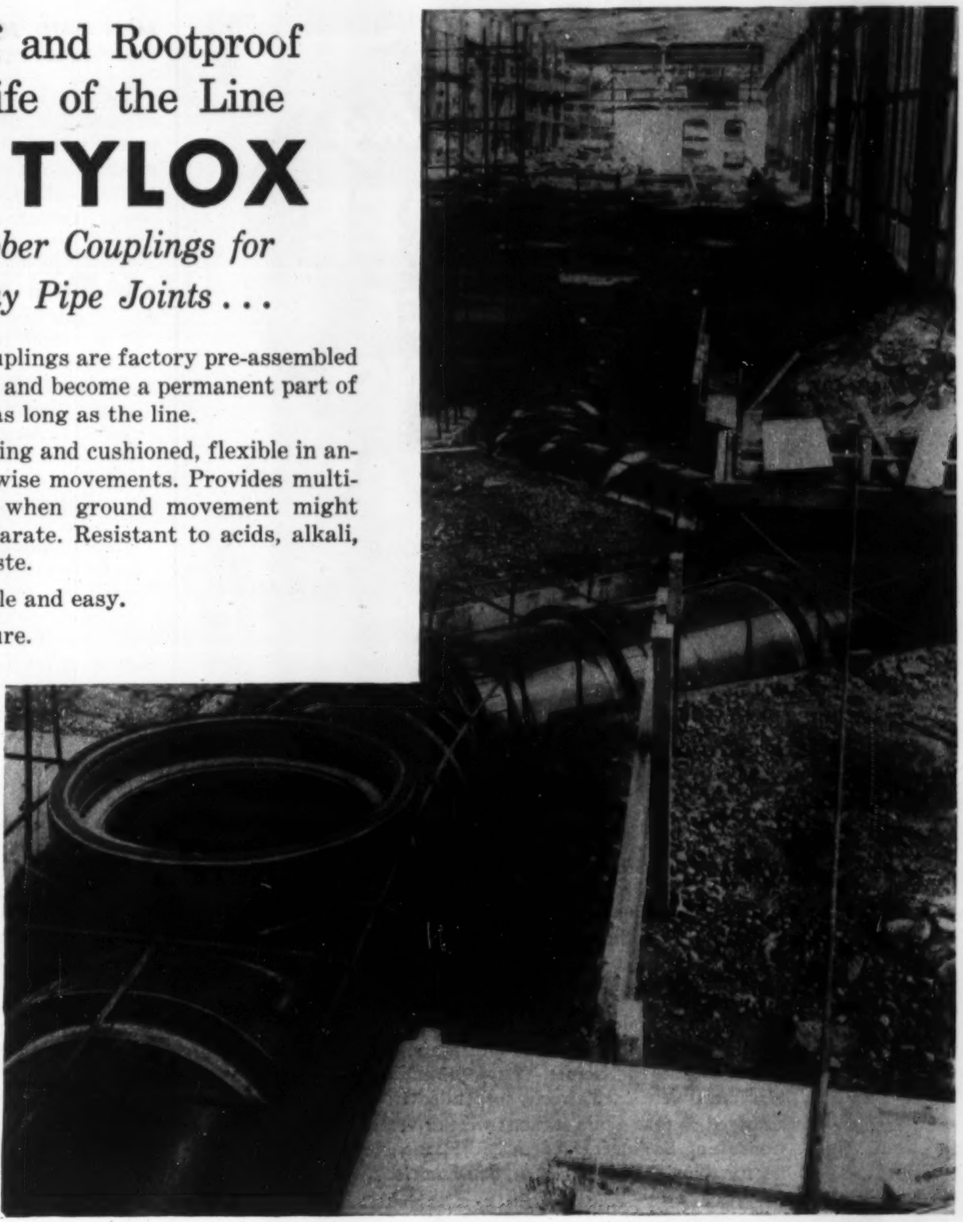
Flexible Rubber Couplings for Vitrified Clay Pipe Joints . . .

Tylox Rubber Couplings are factory pre-assembled — self locking — and become a permanent part of the pipe, lasting as long as the line.

Tylox is full floating and cushioned, flexible in angular and lengthwise movements. Provides multiple sealing even when ground movement might cause pipe to separate. Resistant to acids, alkali, sewerage and waste.

Assembly is simple and easy.

Write for literature.



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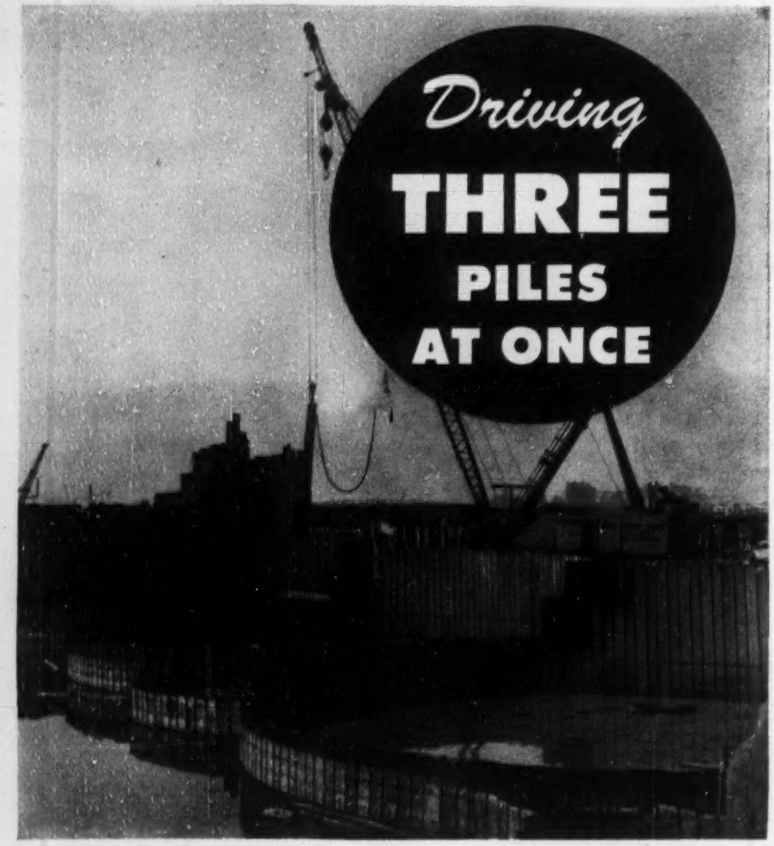

About the most difficult part of the recent pier construction job at the port of Portland, Oregon, was driving the piles of many different types.

Part of the pile driving job consisted of a number of circular cells as shown in the illustration, and for this part of the work McKiernan-Terry 9B3 Double-Acting Pile Hammers were used, freely suspended from crane boom, arranged so that 3 pile sections were driven simultaneously. Consulting Engineer, Frederick R. Harris, New York; Contractor, Guy F. Atkinson Co., San Francisco.

Here, as at construction projects all over the world, McKiernan-Terry Hammers were used to simplify pile driving operations.

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9B3 Double-Acting
Pile Hammer

MEN AND JOBS

• **Corps of Engineers**—Mobile district engineer **Col. Harry L. Fox** is being transferred to Headquarters Communication Zone, U.S. Army, Orleans, France . . . **Lt. Col. Oak E. DeBerg** becomes executive officer, St. Paul district.

• **Associations**—New president of AGC's Carolinas branch is **A. J. Fox,** vice president of F. N. Thompson, Inc., Raleigh, N. C. . . . **Prof. Erasmus S. Borquist,** head of University of Arizona's department of engineering, receives life membership in ASCE . . . **Frank L. Raschig** becomes first life member of Ohio's Society of Professional Engineers.

• **Honors**—Annual award of Washington Society of Engineers for "outstanding contribution to the advancement of engineering knowledge" went to **Clifford A. Betts,** now an associate in the Chicago firm of Alvord, Burdick and Howson.

Gordon N. Scott, Los Angeles consulting engineer, and **W. H. J. Vernon** of England will be presented in March with the 1955 awards of the National Association of Corrosion Engineers.

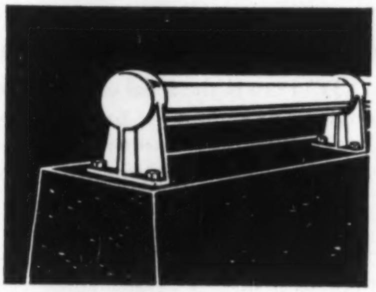
• **Business**—Kuljian Corporation names **Jaime Fonrodona** its Caribbean representative with headquarters in Caracas, Venezuela . . . **Millard M. Moore** becomes chief engineer of D. C. Byers Co.—was formerly Grand Rapids city manager . . . **Richard L. Boke** leaves Bureau of Reclamation to head up Reynolds Metal Company's new irrigation industry products division.

McGraw Construction Co., Middletown, Ohio, names **Elliott D. Levey** president and **Carl H. Martin** administrative vice president . . . **E. C. Brekelbaum** becomes assistant to general manager of Thew Shovel Co. . . **Paul H. Hardaker** and **I. M. Huddleston** leave Bushnell Steel Co. to open own engineering firm in Jacksonville, Fla.

• **Retirements**—Career employe **Edward W. Wendell** from New York State Dept. of Public Works—for 10 years deputy chief engineer in charge of bridges, grade separations and structures . . . **Don G. Evans** as construction engineer for California's division of highways, after 25 years . . . **John M. Nicholson** from Long Island Railroad—51 years in the engineering department, two years as chief engineer . . . **Col. McD. D. Weinert** from U.S. Army, after 33 years with Army Engineers.

HIGHWAY RAILINGS OF ALCOA ALUMINUM

SAVE 30¢ PER FOOT ON OHIO TURNPIKE!



● The bridges you see here are among approximately 300 along the Ohio Turnpike which will have parapet railings of Alcoa® Aluminum. All in all, there will be some 225,000 lineal ft of bridge railing made from Alcoa Aluminum along the 241.4-mile toll road.

Low initial cost is one reason why Alcoa Aluminum was chosen for Ohio Turnpike highway railings. Total installed cost of these railings of Alcoa Aluminum is at least 30¢ per ft less than railings of other metals. This saving is made possible by the easy workability of aluminum, making possible faster fabrication. The lightness of aluminum makes both fabrication and erection easier and less time consuming. Alcoa Aluminum Highway Railings never need painting.

Maintenance free. An equally important cost advantage of aluminum is that it renders the highway railings maintenance-free.

Pleasing modern appearance of aluminum is another plus. The attractive gray finish as it comes from the mill weathers to a pleasing color that blends harmoniously with other construction materials.

To get complete information on the use of aluminum for highway railings, including basic technical data and suggested construction specifications, send today for our 32-page manual, *Bridge Railings of Alcoa Aluminum.* ALUMINUM COMPANY OF AMERICA, 1974-M Alcoa Building, Pittsburgh 19, Pennsylvania.

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Please send me without cost or obligation, 32-page manual, *Bridge Railings of Alcoa Aluminum.*

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Paving the way for the new tax laws on depreciation, a House Ways and Means Committee report (HR No. 1337) stated, "The average machine . . . actually depreciates considerably more and contributes more to income in its early years of use than it does in the years immediately preceding its retirement."

"PAYD"* PLAN

gears new equipment payments to fast depreciation

* "PAY-AS-YOU-DEPRECIATE", C.I.T.'s new plan, is based on the fast, more realistic depreciation schedules allowed by the new tax law. It offers you the best purchase plan for buying and depreciating new equipment.

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The finance charge is 4.25% for each year of the term computed on the original unpaid balance.

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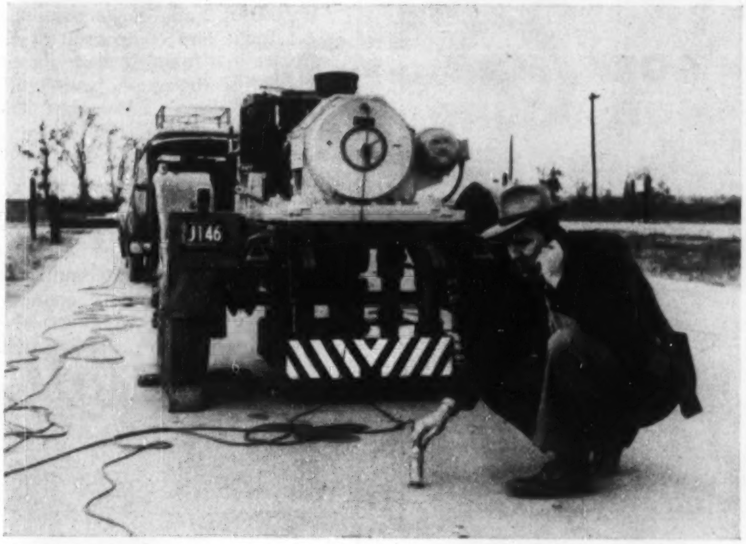


IN TESTING pavements the device's vibrations, transmitted through bed plate on the road, are picked up by oscilloscope recorder, in man's hand. Vibrations resemble traffic.

Dynamic Pavement Tester Demonstrated; Device Checks Full Road Structure

Demonstrations of a Netherlands-developed asphalt pavement testing apparatus, employing a machine in stationary position to simulate the effects of a moving load, continue to arouse interest among U. S. highway engineers.

The testing equipment, developed by Shell Oil Co. engineers over a 10-year period, was most recently demonstrated at the Bureau of Public Roads Research Station in Virginia. It was used for five weeks on the Idaho test road of the Western Association of State Highway Officials, which is expected to make some of its findings available next year. Other tests have been made by the Army Engineers and a few state highway departments.

The equipment, which has the advantage of extreme mobility and ease of operation, measures stiffness (relation of load and deflection), strain, velocity of wave propagation in the pavement, and the fatigue characteristics of the roadway.

• How it operates—A dynamic force is generated by revolving eccentric weights on horizontal shafts. These loads are imparted to the pavement through a vertical shaft and base plate which rests on the roadway. By changing the sizes and eccentricities of the weights and the speeds at which they turn, various traffic conditions are simulated.

The base plate of the machine has a hard rubber face, similar to a tire, and the vibrating pressure that may be applied runs from 20 psi to 80 psi.

Loading frequency can be controlled between 5 and 60 cycles per second so that the load is in place about the same length of time as in the passing of a vehicle.

Measurements of the intensity of the vibrations induced in the pavement are picked up by electronically activated vibration recorders and are shown on an oscillograph and other instruments in a control truck.

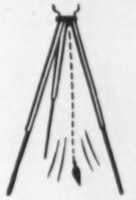
• Measuring capabilities—Stiffness of the pavement can be measured as a single magnitude, the relation of dynamic load per unit of deflection. Strains, as small as one ten-thousandth of an inch, can be measured in the surface of the pavement, both under the vibration machine and under moving traffic.

The dynamic shear modulus of subsoil and subbase, in place, can be calculated through the measurements of the rates of wave propagation produced by the vibration machine. The basic sinusoidal curves indicated on

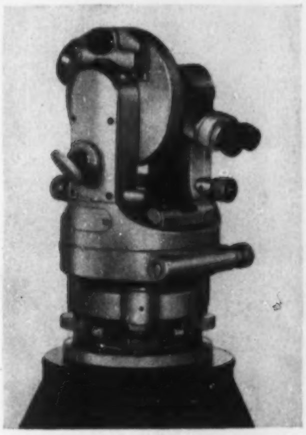
(*Continued on page* 58)

SURVEYING NEWS

NEW THEODOLITE SETS UP QUICKLY, EVEN IN THE WIND



Has this been your problem? Now—old-type mechanical plumb-bob replaced by can't-miss optical principle



- Improved Theodolite reads horizontal and vertical circles simultaneously, through same eyepiece
- Reads direct to 1 min. with no matching of lines—no parallax
- Amazingly blur-free—small, compact, moisture-proof, dust-proof.

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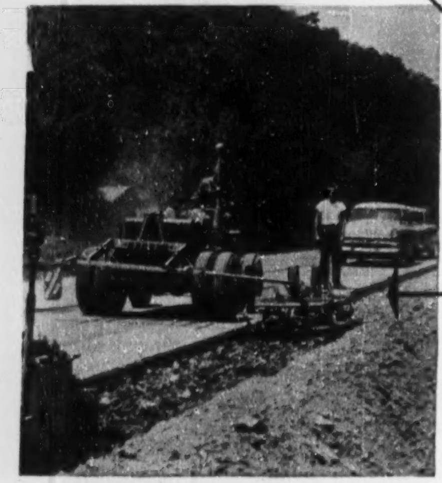
Best way to achieve SPECIFIED DENSITY in ROCK, SLAG, SOIL-BOUND MACADAM, GRAVEL and SAND BASE COURSES use...

JACKSON VIBRATORY COMPACTORS!



On jobs such as this, soil-bound macadam — 5 inches thick, the JACKSON MULTIPLE COMPACTOR, *now more powerful than ever*, achieves specified density in JUST ONE PASS. It is equally efficient on rock, or slag base and all other granular soils.

Quickly adaptable to widening, the JACKSON MULTIPLE COMPACTOR is shown here consolidating slag macadam base course 36 inches wide and 9 inches thick. Using three of the machine's powerful compactor units in tandem, it readily obtains specified density in ONE PASS.

Twin hook-up of manually guided JACKSON COMPACTORS consolidating gravel base for a large pavement repair area. These machines, used singly or in tandem, or side-by-side twin hook-ups, are exceedingly efficient for all types of granular soil base and fill compaction; also for bituminous patching and driveway construction. Operated from a trailer-mounted JACKSON POWER PLANT which may also be used for other power tools and lights.

See your Jackson Distributor or write to us for complete information on these machines.

JACKSON VIBRATORS, INC. LUDINGTON, MICH., U.S.A.

the oscillograph have easily discernible differences for the subsoil and subbase.

By use of strain gauge equipment under traffic and comparison of this data with that found for the vibrating machine on the same pavement, a clear and close relation has been established between the machine's action and that induced by traffic. Relations between various measurements are of an empirical nature, but they do show promise of wide application.

It has the advantage of being nondestructive, requiring no samples or laboratory work. And, of course, it provides immediate findings. Not only can it evaluate load carrying capacities of existing asphaltic pavements, but it is expected to lead to better pavement design and construction methods.

Metal Adhesives Prove Effective in NBS Tests

Tests made on riveted and glued metal aircraft structures at the National Bureau of Standards indicate that the mechanical properties of both types of connections are not too different. Thus, high-strength metal-to-metal adhesives may be substituted for rivets in some cases, when economic, structural and weight-saving advantages may be secured.

The tests were conducted by Wilhelmina D. Kroll and Leonard Mordfin of NBS under the sponsorship of the National Advisory Committee for Aeronautics and the Navy Bureau of Aeronautics.

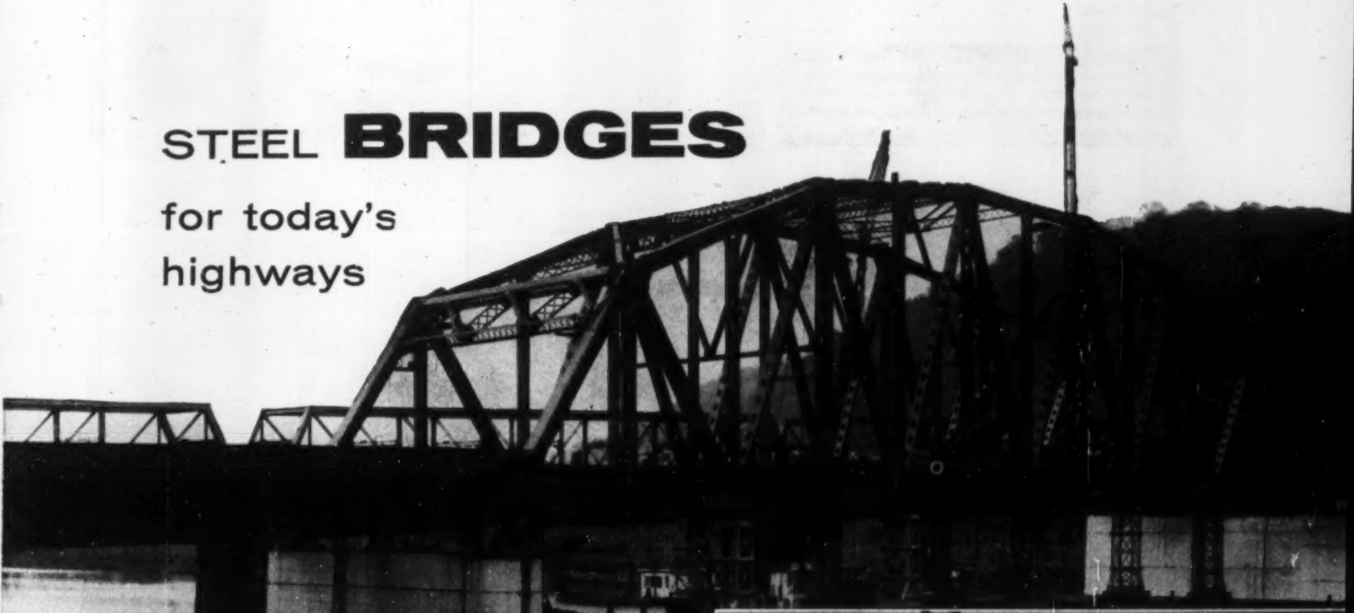
Included in the investigation were sandwich panels consisting of aluminum-foil honeycombs glued to aluminum alloy sheet facings; also sheet stringer panels consisting of a sheet with stiffeners attached longitudinally to one side.

NBS tested 21 riveted and bonded sheet-stringer panels fabricated from 75S-T6 alloy with five stringers each, at 3½-in. intervals. Nine panels were riveted with a 1⅛-in. pitch, nine were bonded with an epoxy resin adhesive and three were bonded with a phenolic resin-rubber adhesive.

The tests showed that the primary advantage of bonded sheet-stringer panels over riveted ones with one line of rivets per stringer is increased stability because of the broad area of attachment between stringer and sheet. The disadvantage of bonded panels is that under maximum load in flat end compression they are almost completely destroyed, whereas riveted panels fail by local buckling of the sheet.

STEEL **BRIDGES**

for today's
highways



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·DES MOINES

Modern highways demand modern bridges wherever roads must "take to the air." For half-a-century, bridge fabrication and erection have been a vital part of our activities, with every advance in design and method reflected in the dependable structures we build. ● The project pictured is the Fleming Park Bridge at Neville Island, Pittsburgh. With an overall length of 804 feet, the bridge has a through-truss channel span of 360 feet, and will accommodate four lanes of traffic, relieving a serious bottleneck in a heavily-travelled area. ● Let us consult on your bridge requirements, and submit a quotation.

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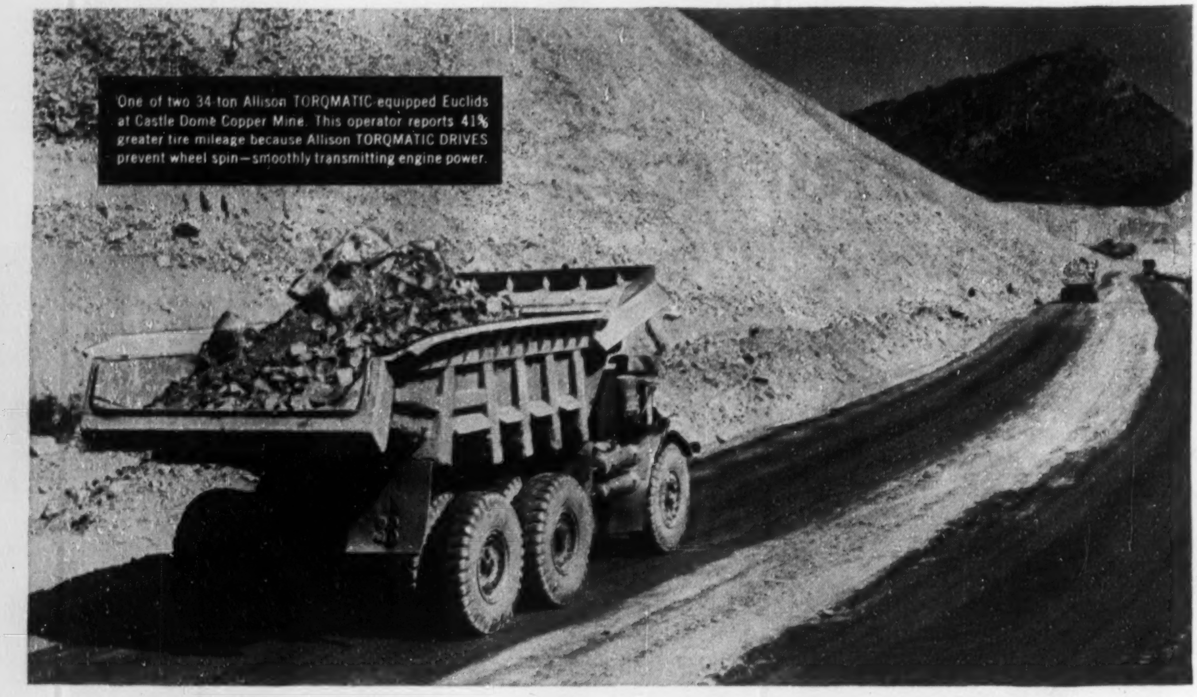

One of two 34-ton Allison TORQMATIC-equipped Euclids at Castle Dome Copper Mine. This operator reports 41% greater tire mileage because Allison TORQMATIC DRIVES prevent wheel spin—smoothly transmitting engine power.

"41% longer tire life"

Castle Dome Copper Company reports it gets 17,000 miles per tire on off-highway trucks equipped with Allison TORQMATIC DRIVES compared to 12,000 miles per tire on mechanical-drive units. But increased tire life is only part of the story—the firm also reports the TORQMATIC-equipped "Eucs" have better availability and production records.

This operator runs a fleet of 12 trucks—2 TORQMATIC-equipped "Eucs" and 10 mechanical-drive units—hauling 390,000 tons of ore and overburden per month up 8% grades on mile-long runs. The "Eucs" average 25.3 trips per 8-hour shift, each hauling about 58,000 tons per month.

TORQMATIC DRIVES smoothly transmit engine power—help prevent wheel spin that can quickly strip the tread from a tire. There's no clutch pedal to push and only three forward gearshifts—instead of the usual 7 or 10—handle all loads and grades. The *matched* converter-transmission team balances engine power and load demand, absorbs harmful drive-line shocks, prevents damage to drive-line components, helps stop engine lugging.

You, too, can cut your operating costs by specifying Allison TORQMATIC DRIVES the next time you buy. Ask your equipment dealer, manufacturer or write:

Allison Division of General Motors
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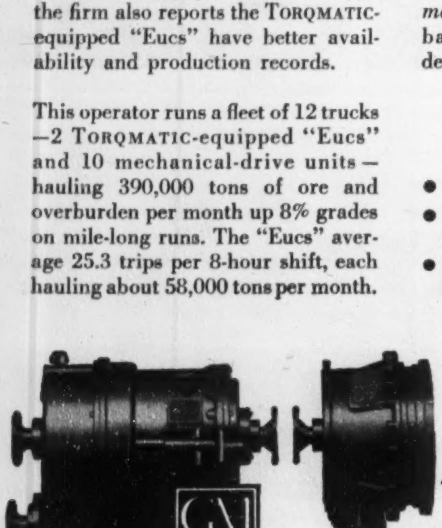
ALLISON TORQMATIC DRIVES

Unbeatable Team for Maximum Operating Economy

- **Cuts** driver training costs
- **Quick-Shifts** at full throttle with finger-tip hydraulic control
- **Holds** power to load at all times—no clutch pedal to push—no gearshift guess
- **Reduces** maintenance costs by absorbing shock—eliminates engine lugging—prolongs equipment life
- **Only** torque converter-transmission team designed to work as a *unit* and built by one manufacturer

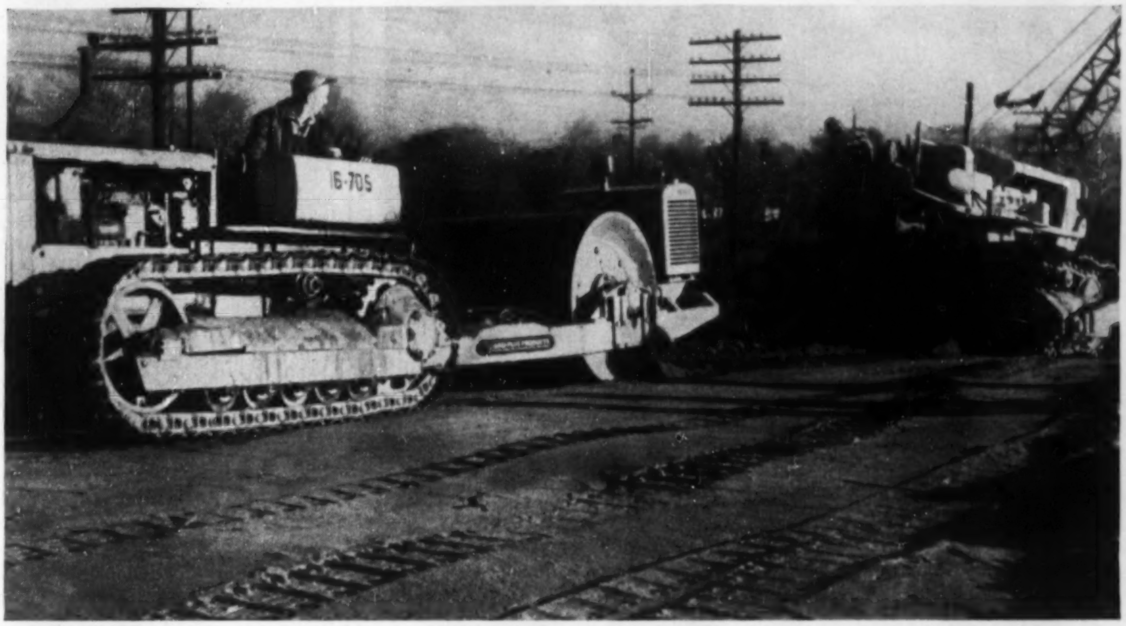


Allison

TORQMATIC DRIVES

FIRST MATCHED UNITS BUILT
BY ONE MANUFACTURER

COMPACT, EFFICIENT HYDRAULIC DRIVES FOR CRANES • TRUCKS
TRACTORS • SCRAPERS • SHOVELS • DRILLING RIGS



VIBRATING COMPACTOR is tractor-drawn. Either a crawler such as the Cat D4 above or rubber-tired type may be used.

Vibration Multiplies Effect of Light Rollers

A new 3-ton vibrating roller has been demonstrating considerable effectiveness in compacting sections of the S. J. Groves spread on New Jersey's Garden State Parkway. Light and compact with a turning radius of only 15 ft, the unit has been particularly useful in cramped working areas.

Designated the CH 30, the compactor consists of a single cylinder measuring 48 in. in dia and 58 in. in length vibrated by a 25-hp Waukesha diesel engine. V-belts are used to transmit power from the engine to rotate—in opposite directions—two steel balls inside the cylinder. Vibration frequency is variable from 1,400 to 1,600 vpm, and at maximum frequency the centrifugal force of the vibration is about 7 tons.

A dampener mounting reduces shock transmission to the frame. According to the manufacturer, the suspension between the frame and roller is so effective that the unit can be towed at relatively high speeds in transportation without danger of damage to the roller.

Tests conducted by consulting engineers on the Parkway job, Fay, Spofford & Thorndike, show that three passes of the roller over non-plastic silty sand produced 95% compaction at a depth of 1 ft; six passes produced 100% compaction at that depth.

Earlier tests by Prof. R. K. Bernhard of Rutgers University were conducted on soils consisting of 80% fine sand, 12% coarse sand and 8% silt and clay. Two feet was chosen as a conservative effective depth and after two passes at 2 mph the required 95% Proctor density was produced. Vibration frequency in this case was 1,500 vpm.

The company also reports superior results from an airfield project in Italy where the CH 30 is reported to have given better penetration than a 100-ton pneumatic-tired compactor.

Another vibrating compactor, the CG 10, has been designed for compact-

(*Continued on page 62*)

ONE-TON VIBRATING COMPACTOR has driving and vibrating force transmitted to the front roller while the smaller rear roller serves to guide the machine.

ing backfills, road repairs, etc. This is a 1-ton double roller type powered by a 6-hp Wisconsin gasoline engine that drives the unit at two speeds forward and two reverse—65 fpm for compaction and 130 fpm for travel.

The front cylinder is both the vibratory and the driving roller while the rear roller serves as the guide. The vibrating roller is mounted to dampen shock transference to the rigid frame.

The front roller is 27½ in. long and 29½ in. in dia—the rear roller is nearly 10 in. smaller in both dimensions. Vibratory frequency is variable from 1,500 to 2,000 fpm. Vibro-Plus Products, Inc., 54-11 Queens Blvd., Woodside, N. Y.

Instrument Controls High-Speed Cameras in Testing

Model 3157 Multiple-Sequence Megacycle Preset Interval Generator provides a means of generating a series of preset time delays adjustable in increments of one microsecond. Typical applications include multiple-sequence control of high-speed camera systems and radiographic units for use in destructive testing facilities.

The system includes a 1-megacycle crystal-controlled master oscillator that feeds one or more preset counters capable of producing an output pulse any desired number of counts (microseconds) after application of a start pulse. Each counter is set to the desired number of microseconds—up to 999—by means of front panel selector switches. For sequential intervals or extended delays, the output of one counter may be used to start another.

Provisions are made for using the equipment as a multiple-channel interval timer. Pulses defining an interval are used to open and close an electronic gate that causes 1-microsecond-spaced pulses to be counted during the unknown interval. Direct indication in microseconds is by means of neon lamps arranged in binary-coded decimal form. Potter Instrument Co., Inc., 115 Cutter Mill Rd., Great Neck, N. Y.

Trailer-mounted Tool Box Offers Mobility and Security

A pneumatic-tired all-steel tool box features side compartments, internal sliding tray and front and rear drop legs with pads, all of which lock from the inside of the box. The wheels and tires, too, lock fast from within to make the unit tamperproof. Two independent tumbler locks on the covers secure everything.

Standard safety equipment in-

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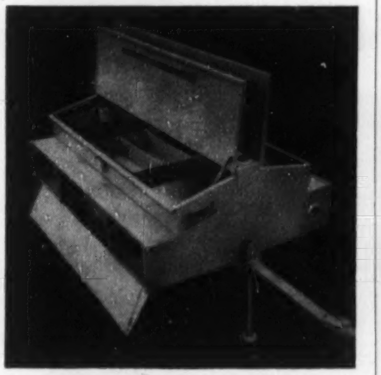


cludes two automatic red flasher lights, front and rear reflectors and tail light-license plate light. The red flasher lights are battery operated and will flash continuously for a minimum of 50 hours; standard batteries are used for replacement.

The tool trailer carries up to 2,000 lb of tools and equipment, and storage capacity, including the four side compartments, is 30½ cu ft. For flexibility and convenience the box may be unbolted from the chassis, leaving the chassis free for utility hauling, or allowing the box to be mounted on a pickup truck. AEROIL PRODUCTS CO., INC., 330 WESLEY ST., S. HACKENSACK, N. J.

New Heil Hoists and Dump Bodies Are Weight Savers

Three new telescopic hoists and weight-saving bodies now are being offered that will make greater legal payloads possible in the 21 to 30-ton capacity class.

The new hoists may be mounted inside or outside of the chassis frame rails to fit any make of tandem truck or semi-trailer. A loose parts kit supplied with the hoist is a universal type for mounting the hoist inside or outside and for a forward or backward push.

According to the manufacturer, elimination of deadweight in the bodies makes for a bigger payload than is possible with bodies of like capacity, and the specially designed bodies accommodate the forward lifting point of the telescopic hoists. A hoist basket ordinarily needed for standard arm-type hoists is not necessary, although such a basket may be easily installed should the body ever be used with a standard hoist.

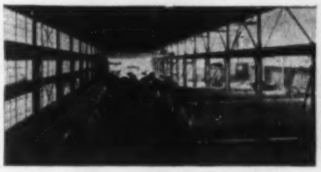
The new hoists have what is reported to be the lowest mounting height of any telescopic hoist now available; the body may be mounted as

(*Continued on page 66*)

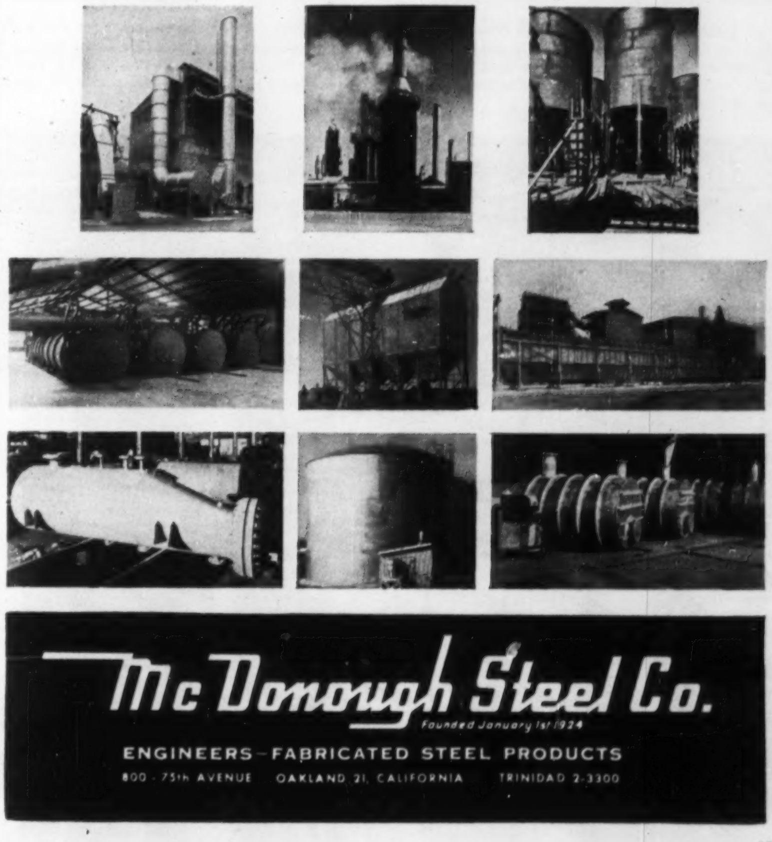
Here's Proof-

McDonough has the facilities and experience to handle your steel or alloy fabricating job.

Combined to meet your requirements—sound engineering design, complete manufacturing facilities, experienced workmen.



Experience in every field of industry, from the usual to the most difficult fabricated steel work—regardless of weight, bulk or tolerance. Finished projects pictured below: smoke stack, duct and breeching assembly; furnaces for petroleum industry; soap storage kettles; vacuum tubes for food processing plant; grain storage bins; flue and coolers for smelting plant; stainless steel kettle for petroleum industry; field storage tank; all-aluminum tanks for underground storage of liquid chemicals.



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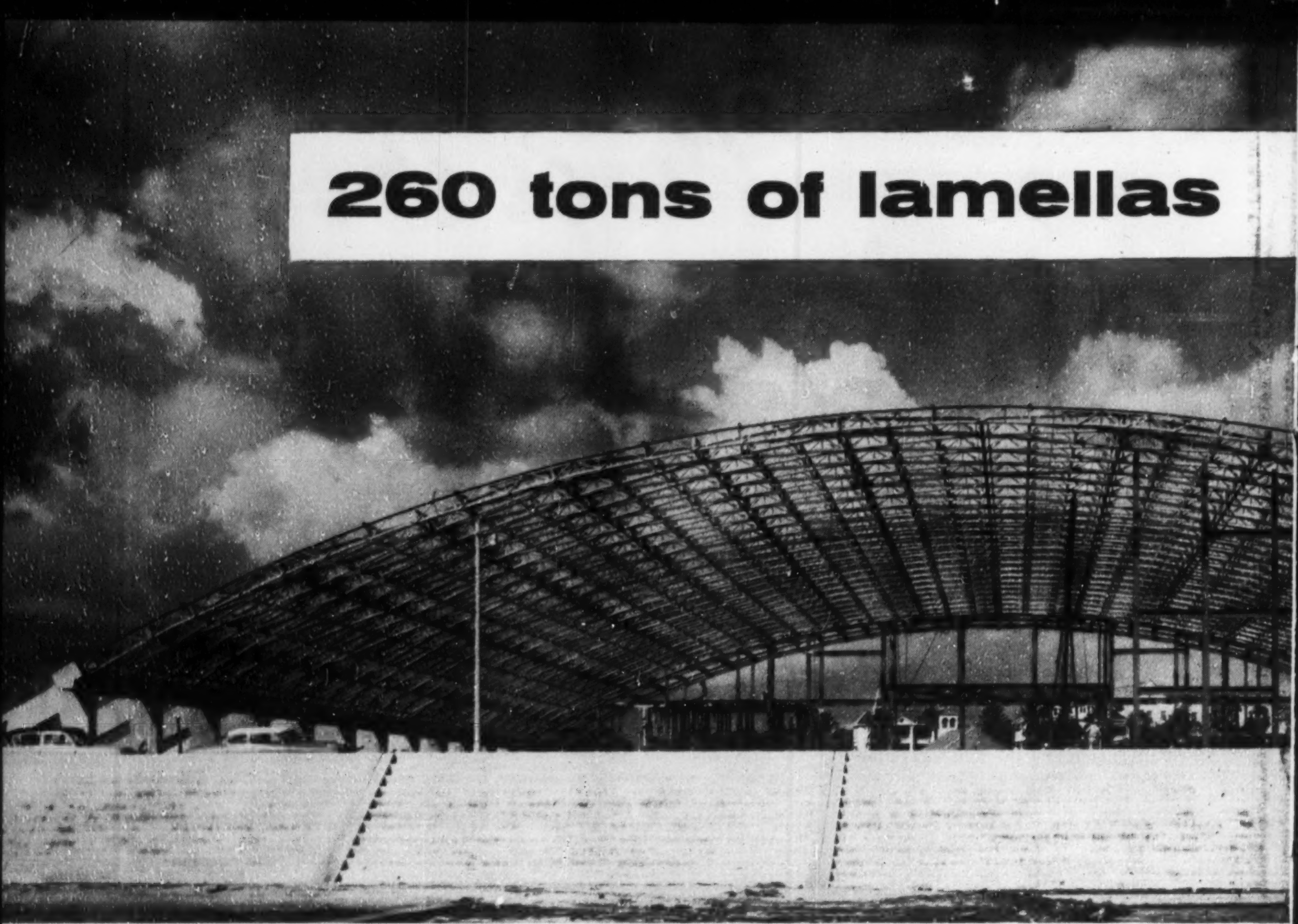
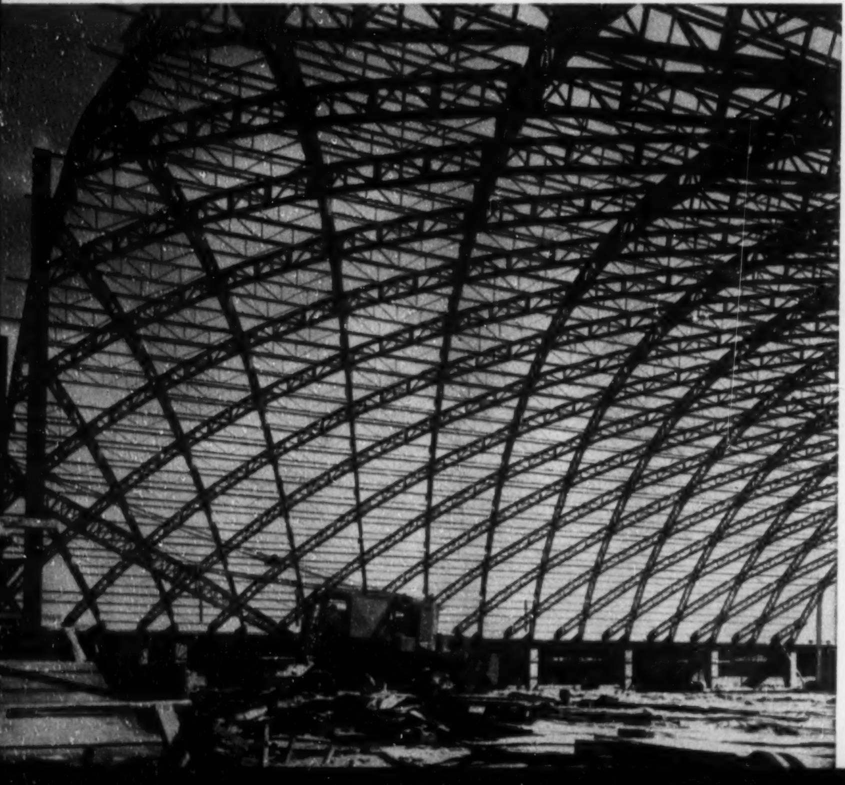
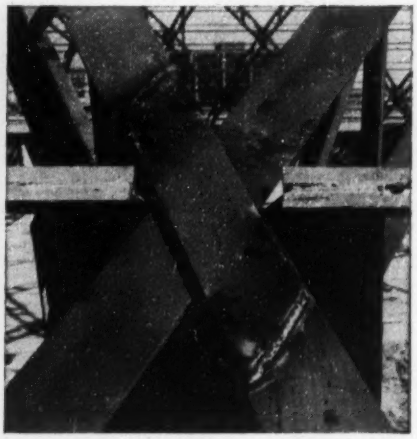
260 tons of lamellas



ROOF STRUCTURES OF TEXAS, with offices at Austin and Houston, holds the contract for the auditorium roof. Lamella roof design and details prepared by G. R. Kiewitt and Hale & Harvie, Consulting Engineers, St. Louis. Designers of the foundation and general building work, exclusive of the roof structure, were Blucher and Naismith, Structural Engineers of Corpus Christi. Lamella units fabricated by Columbia Iron Works, St. Louis, and the purlins by Tips Engine Works, Austin. Richard S. Colley is the architect, and Walsh Construction Co., the general contractor—both of Corpus Christi.



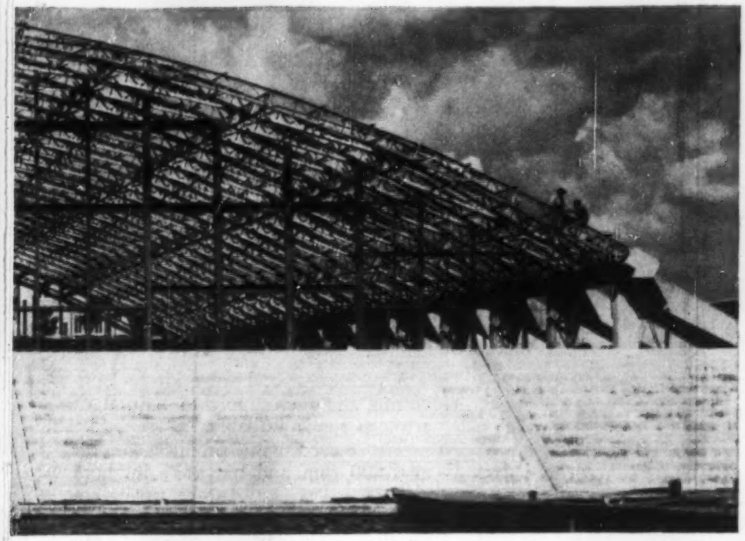


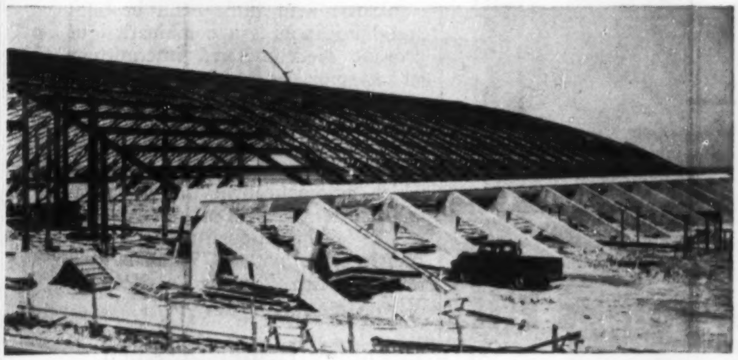
THE ARCHES AND PURLINS are open web members of Structural Steel, 24 in. deep. Except for the high tensile bolts which were used to erect the arches, the framing is all-welded.

LAMELLA CONSTRUCTION—unusual in that the main members span supports on a skew, forming diamond-shaped areas between the intersecting members.

# of USS Structural Steel

erected in 25 days





THE MAIN MEMBERS—circular steel arches—spring from concrete buttresses along the sides of the building. They span 224 ft. with a rise of 30 ft., providing a 42 ft. clear height at midspan. Main and intermediate purlins are spaced about 6 ft. apart.

It took just 25 working days for the Gulf Erection Co., of Houston, Texas, to erect 260 tons of structural steel, covering 65,000 sq. ft., for the arched roof of the Municipal Civic Auditorium in Corpus Christi, Texas.

A somewhat unusual type of construction, known as lamella, was used. The main members span the arch on a skew, forming diamond-shaped areas between the intersections. The lamella units were identically fabricated, except for being right and left hand. This, plus the fact that only two types of purlins were required, simplified fabrication and erection considerably. Falsework was necessary only to erect the first few members. The succeeding members were erected with a crane.

This is the type of application in which versatile USS Structural Steel excels. It is extremely tough, yet is the most economical of load-carrying materials. It will withstand more abuse than other structural materials, effectively resisting tension, compression, torsion, and shear. Enclosed in buildings, Structural Steel will last indefinitely—requiring no maintenance. Equally adaptable to riveting, welding or bolting, it can be erected in any weather in which men can work. And because steel members are fabricated indoors, weather can have no effect on the quality of workmanship.

Write today for complete information on construction with steel—United States Steel Corporation, 525 William Penn Place, Room 4535, Pittsburgh 30, Pennsylvania.

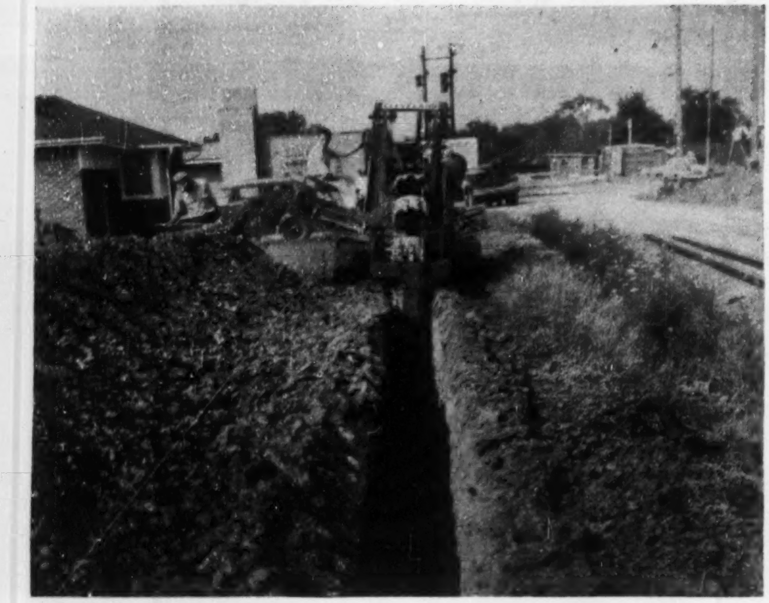
UNITED STATES STEEL CORPORATION, PITTSBURGH · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. · UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS STRUCTURAL STEEL

USS

4-474A

UNITED STATES STEEL



This CLEVELAND

Digs 4 to 5 Jobs Every Day

This "Baby Digger" meets heavy daily schedules of scattered jobs, digs *on time, every time,* hustles safely from job to job at legal limit speeds on a compact Cleveland trailer.

This CLEVELAND

Lays Pipe, Fills Trench, Tamps Fill

The Cleveland "80" (or "80-W")—widely employed in gas distribution construction—saves *money, men and machines.* One-man-operated, it does a faster, safer, cleaner job on *each* of these construction operations.

Write for descriptive bulletins and specifications, or get the full story on CLEVELANDS from your local distributor

THE CLEVELAND TRENCHER COMPANY
20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

CLEVELAND

low as possible for adequate tire clearance.

Other features of the new telescopics are: a dumping angle of 42½ to 50 deg; hoist sleeves made from seamless steel of special material; a wide choice of gas tank mounting including outside, inside, or step tank; and three models for every hauling need in the 21 to 30-ton capacity range. THE HEIL CO., MILWAUKEE 1, WIS.

Kohler Offers Six Models Of 15-kw Electric Plant

A new 15-kw gasoline-powered AC electric plant is available in six different models with remote control or stand-by starting, and with varying voltage outputs. The new plant is water cooled with radiator, belt-driven centrifugal pump and blower fan. It features an adjustable jet carburetor with automatic choke and a mechanical fuel pump equipped with oil bath air filter.

A carburetor and valve kit for converting the fuel supply to natural or artificial gas is available.

The 6-cyl engine produces 51 hp at 1,800 rpm and has a 3¼ in. bore and 3¾ in. stroke. Intake valves are of chrome nickel and exhaust valves of chrome-silicon; pistons are aluminum alloy. There is a forged steel crankshaft with three main bearings and lubrication is a combination of pressure feed, metered intermittent jet and spray.

Remote starting of the new Kohler plant is accomplished through an on-off switch on the plant or by a two-wire remote control. Stand-by starting, which automatically starts the plant and transfers the load whenever regular service fails, is through an emergency transfer panel with a 75-amp built-in transfer switch. KOHLER CO., KOHLER, WIS.

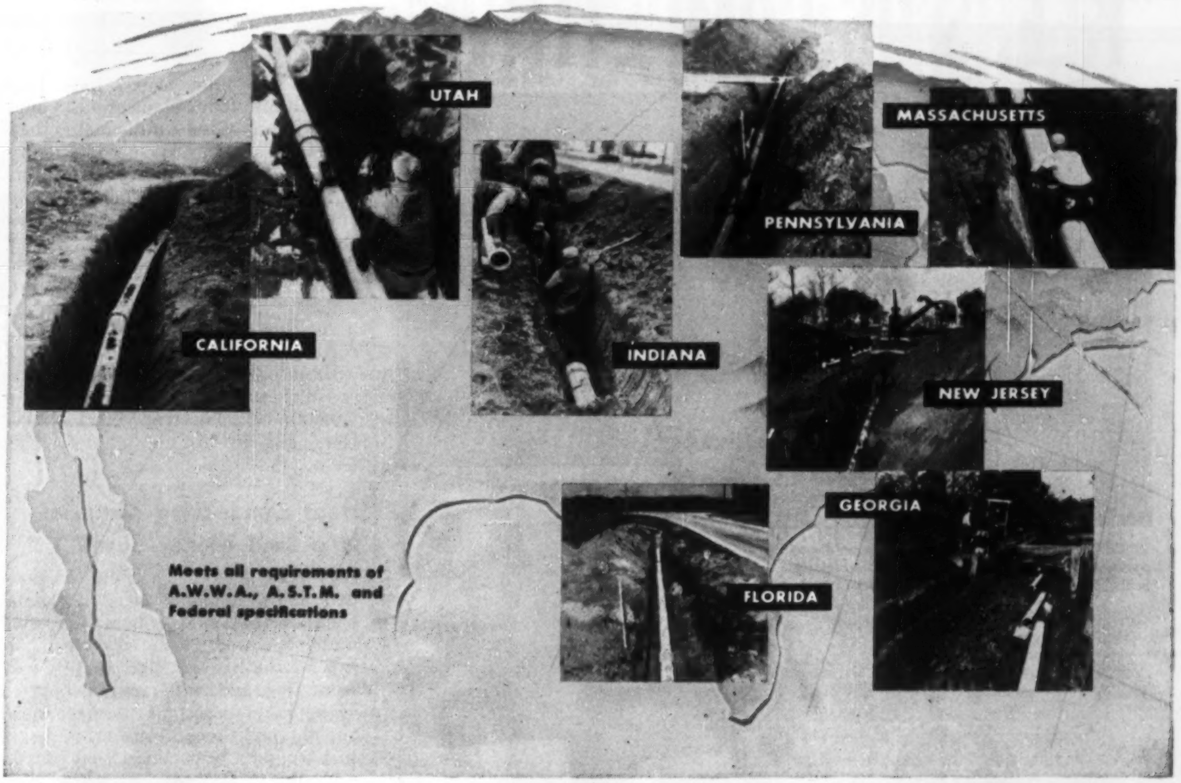
Downblow Heater Designed With Removable Fan and Motor

A downblow unit heater is now being manufactured with a motor and fan that can be removed from the bottom of the unit and a die-formed full venturi.

The motor mountings are completely separated from the coil and heated air stream and are attached to special rubber mountings in the bottom of the motor well. The design of the well enables the serviceman simply to loosen four bolts in order to drop the well, motor and fan from the unit. However, the design is said

(*Continued on page 68*)

Setting new standards – everywhere...


UTAH
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FLORIDA
Meets all requirements of A.W.W.A., A.S.T.M. and Federal specifications

Transite Pressure Pipe and Ring-Tite Coupling speed water line assembly, lower installation cost

IN COMMUNITY after community, proof that Transite® Pressure Pipe and Ring-Tite® Coupling speed water line assembly and cut installation costs is reflected in such contractor comments as these:

"Exceeded by far, the speed anticipated under job conditions."

"Based bid on 400 feet a day, actually laid over 700 feet."

"Established an entirely new concept of installation savings."

These new records for speedy installation have been accomplished despite adverse terrain, weather conditions and the presence of muck and mud in many of these locations. That is why, whatever your water line problem it will pay you to learn all about Transite's many advantages.

Write for the new Transite Brochure, TR-142-A, Johns-Manville, Box 60, New York 16, N. Y.

Johns-Manville TRANSITE PRESSURE PIPE
THE ASBESTOS CEMENT PIPE WITH THE NEW RING-TITE COUPLING

G-E 2-WAY RADIO
"KEEPS US COMPETITIVE"

VICE-PRESIDENT, J. C. GARRISON, maintains close supervision over his firm's activities. G-E radio equipment is his "most reliable foreman on every job"!

ALL TRUCKS UNDER CONTROL. "Our dispatcher is the key man in an efficient operation. He times deliveries, issues change orders, if necessary, and even expedites mechanical repairs for competitive company equipment!"

2-WAY MOBILE RADIO
FREQUENCY STABILITY & SELECTIVITY
guaranteed for life!

● TO STAY COMPETITIVE in the construction business today, dependable radio communication is essential. Greenville Concrete Company of South Carolina has proved that point many times during the last four years. It offers an ideal solution to perfect timing of concrete deliveries. Any delay in unloading is instantly covered with a radio request for re-routing instructions. Every construction vehicle equipped with *G-E radio* does a *better job* . . . *does it faster* . . . and *at less expense.* That's how your profit gets a boost!

Investigate General Electric mobile radio today . . . apply its multiple benefits to your construction activity. Why not call our Communications Counselor at a local office or mail the coupon below.

SEND FOR FREE INFORMATION!

General Electric Company, Section X22124-9
Electronics Park, Syracuse, New York
Please send bulletin ECR-47 showing how General Electric 2-way radio can aid me in the construction business!

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CITY...STATE.........................

GENERAL ELECTRIC

to be such that the possibility of the assembly working itself loose and accidentally dropping out has been eliminated.

The new unit heaters have been grouped into four classifications. Quietness level for Class I units makes them suitable for courtrooms, classrooms, hospitals, private offices and theaters. Class II units can be installed in hotel dining rooms, show rooms, small stores and similar places. Class III and IV units are designed for use where relatively higher noise levels can be tolerated.

Available in both one and two-row coils, the downblow heater can be had with outputs ranging from 40,000 Btu to 580,000 Btu. Union Asbestos & Rubber Co., Heating and Cooling Div., 332 S. Michigan Ave., Chicago, Ill.

Heat Conducting Material Is a Real Money Saver

A ready-to-apply mixture of powders and a liquid to form a thermal conducting material is being marketed under the trade name of Tracit. It is a mortar-like material that is self-hardening, and, when set, is reported to be highly resistant to mechanical and thermal shock. Further, it is said to have good heat conduction properties and is therefore useful in conducting heat between surfaces, usually irregular in shape.

Tracit is adhesive and may be applied to surfaces by hand or with a trowel. After setting by drying, either in air or forced drying, the material bonds to the surface.

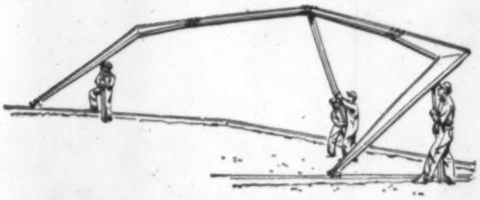
One use of the Tracit is its application over traced pipe, valves or equipment where it is desirable to maintain a constant temperature by the addition or subtraction of heat. In this use, it is found to be an alternate to the more expensive method of jacketing.

For instance, the jacket on a 1 or 1½ in. stainless steel jacketed valve cost approximately $150. Tracing tubing for steam, Dowtherm, hot or chilled water, etc., and Tacit will cost less than $15 applied. The reported savings are high and the heating characteristics are said to be very comparable.

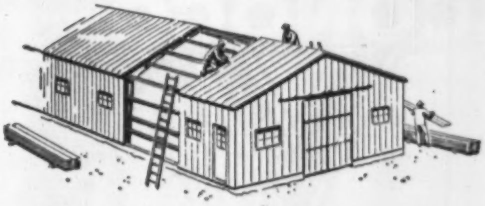
Because of its heat transfer qualities and high compressive strength, Tracit is recommended for the floors of radiant heated homes or plants where good distribution of the heat in the tubing is desired. Chemax Manufacturing Corporation, 900 Wilmington Rd., New Castle, Delaware.

You can do all this with a

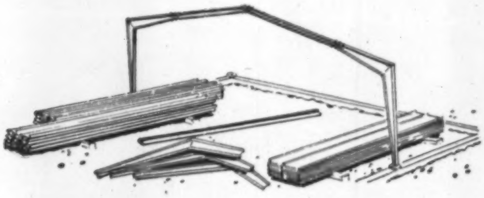
BUTLER steel building



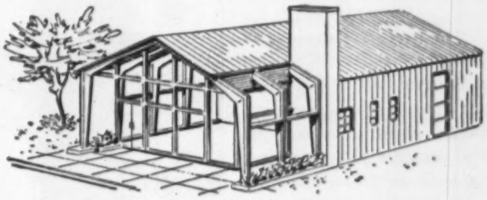
Complete it in half the time—
Half-finished at the factory—with precision die-formed and punched cover panels—a Butler building goes up fast. It simply bolts together.



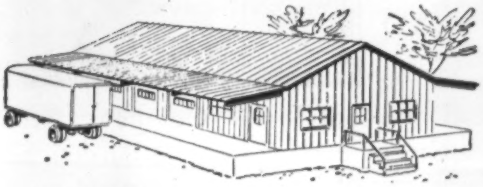
Expand it economically while in use—
Move out walls and bolt in new sections with less than half the usual delay and mess—and without loss of materials. Costs less too!



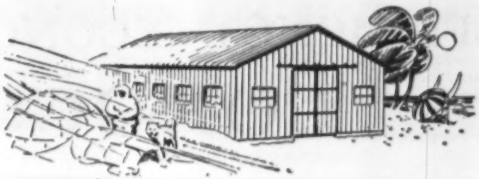
Move it quickly and conveniently—
Yes . . . move it, with 100% salvage of the original materials! Simply remove bolts, transport sections to new site, and re-assemble.



Finish it to any degree of beauty—
Your Butler dealer will build to meet the needs of your business—install decorations, masonry front, offices, interior finish, etc.



Modify it to any use—
Need an attractive store or dealership, loading dock, hoists or monorails? Your Butler dealer will plan and install what you need.



Use it in any climate—
Designed to seal tight—and precision made—a Butler building is storm-proof. Easily insulated against tropic or arctic weather.

...and buy it for LESS *than a conventional building!*

Yes, Butler's modern engineering and mass production have created a modern building that saves you money right down the line—on erection, materials and maintenance costs. Investigate Butler before you buy. Why not start now by mailing coupon below for free catalog.

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1028 Avenue W, Ensley, Birmingham 8, Alabama
Dept. 18, Richmond, California

Please send me name of my nearest Butler dealer and also your free folder on new Butler Pani-Frame steel buildings.

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Firm__________
Address__________
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CONOCO

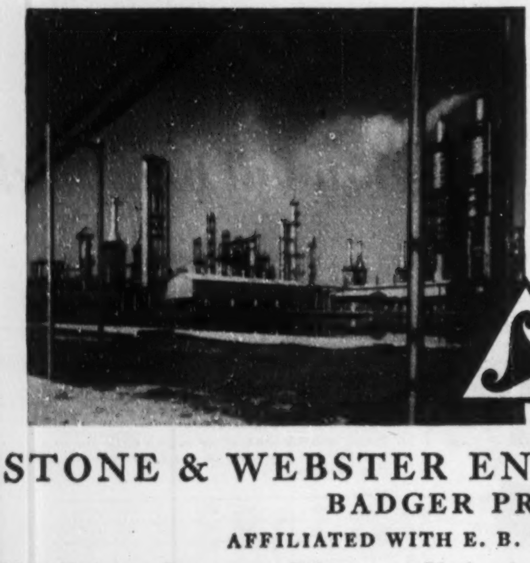
New installations recently placed in operation at Lake Charles, include units for crude oil distillation, catalytic cracker feed preparation, Thermofor catalytic cracking, gas recovery, catalytic polymerization, catalytic reformer feed preparation and aromatics extraction.

GREATER CAPACITY–EFFICIENCY–ECONOMY FOR CONOCO

For Continental Oil Company, Stone & Webster Engineering Corporation designed and constructed seven types of process units and enlarged an existing alkylation unit at the Company's Lake Charles, Louisiana, refinery.

Continuous flow through several of the units minimizes the need for intermediate offsite storage facilities; and all units are closely integrated for high heat economy.

These new units more than tripled the capacity of the refinery.



Write or call us for detailed information as to how our engineering, design, construction, report and appraisal services may be of assistance to you.

STONE & WEBSTER ENGINEERING CORPORATION

BADGER PROCESS DIVISION

AFFILIATED WITH E. B. BADGER & SONS LIMITED (LONDON)

New York Boston Chicago Pittsburgh Houston San Francisco Los Angeles Toronto

NEW PRODUCTS

Bituminous distributors—A new 6-page bulletin has been published, No. 54-3, which illustrates the company's line of bituminous distributors. Rosco Mfg. Co., 3118 Snelling Ave., Minneapolis 6, Minn.

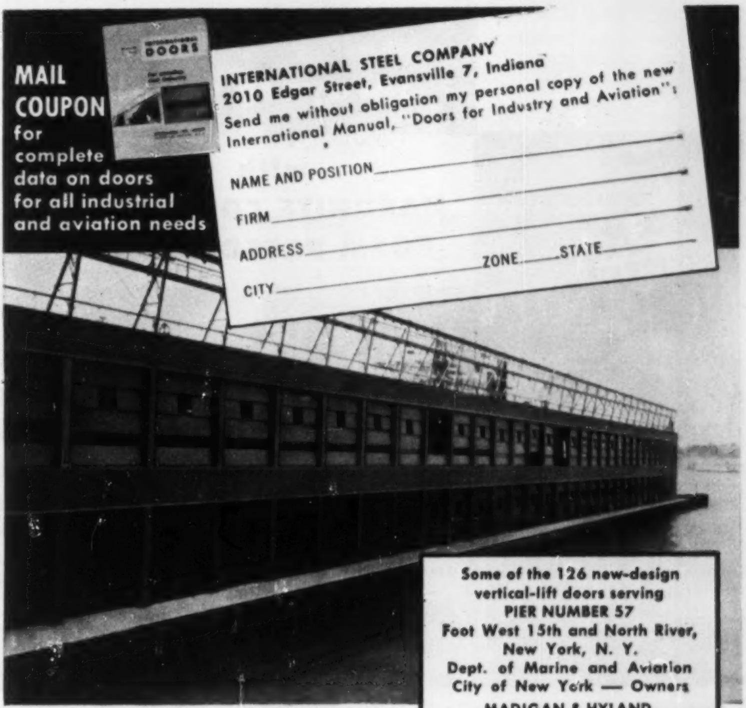
Wrought iron pipe—"Piping for Permanence" is the title of a 32-page bulletin containing technical data based on an analysis of piping systems in which wrought iron is specified to help solve corrosion problems. Sections are devoted to a round-up of wrought iron pipe installations, a review of piping properties, descriptions of individual service in building-piping systems and recommendations to help reduce the rate and severity of corrosion. Also included in the bulletin is an 11-page chapter that deals exclusively with water analysis and treatment. Engineering Service Dept., A. M. Byers Co., Pittsburgh, Pa.

Cranes—A 12-page catalog illustrates and describes the Lorain 42 Series. Highlighted in the booklet are the design features of the line and a section is devoted to the Moto-Shovel, Moto-Hoe, Moto-Clamshell, and Moto-Dragline. Another section gives special emphasis to the crane boom and its equipment. Numerous on-the-job pictures appear throughout the booklet. Thew Shovel Co., Lorain, Ohio.

Scale models—Scale models, their application and manufacture, are described in a new 4-page brochure. Models of any product, prototype design, or piece of equipment are made to user specifications to aid in development and research work, plant layout, construction estimating, etc. The booklet illustrates a number of models produced by the company. Booklet K. Arthur B. Johnson & Co., Inc., 392 E. 201st St., New York 58, N. Y.

Concrete pressure pipe—A 24-page booklet, "The Story of Concrete Pressure Pipe," deals with the history of concrete in water lines and its present application in prestressed concrete pressure pipe. There are 14 sections. One of them "How Prestressing Works" shows with simple drawings the principles of tension and compression in the pipe and how prestressing makes possible near "zero" compression with the water line operating at design pressure. The catalog section lists and illustrates types of the company's pressure pipe for water

(*Continued on page 72*)



MAIL COUPON for complete data on doors for all industrial and aviation needs

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2010 Edgar Street, Evansville 7, Indiana
Send me without obligation my personal copy of the new International Manual, "Doors for Industry and Aviation":

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Some of the 126 new-design vertical-lift doors serving
PIER NUMBER 57
Foot West 15th and North River, New York, N. Y.
Dept. of Marine and Aviation City of New York — Owners
MADIGAN & HYLAND, Long Island City, N. Y.: Architects and Engineers
CORBETTA CONSTRUCTION CO., New York, N.Y.: General Contractors for Superstructure
INTERNATIONAL STEEL CO.: Fabricators and Erectors

INTERNATIONAL NEW-DESIGN DOORS

ADD A NEW ANGLE

that adds storage plus protection

Close-up of International-built doors at Pier No. 57. Note "nesting" of leaves when doors are opened — also the protective barrier formed by a 4-ft. section of the lowermost leaves of upper-deck doors.

SEE COMPLETE CATALOG IN SWEET'S ARCHITECTURAL FILE

You're looking at New York's first new pier since World War II — also the first important advance in industrial door design that's been made in many a year.

It's another innovation by International: Doors that operate in parallel guides . . . each leaf sliding upward in its own angled guide . . . with all leaves finally nesting vertically within the structure's framework. And it's this vertical versatility that offers every plant, warehouse, pier, or factory these three added advantages:

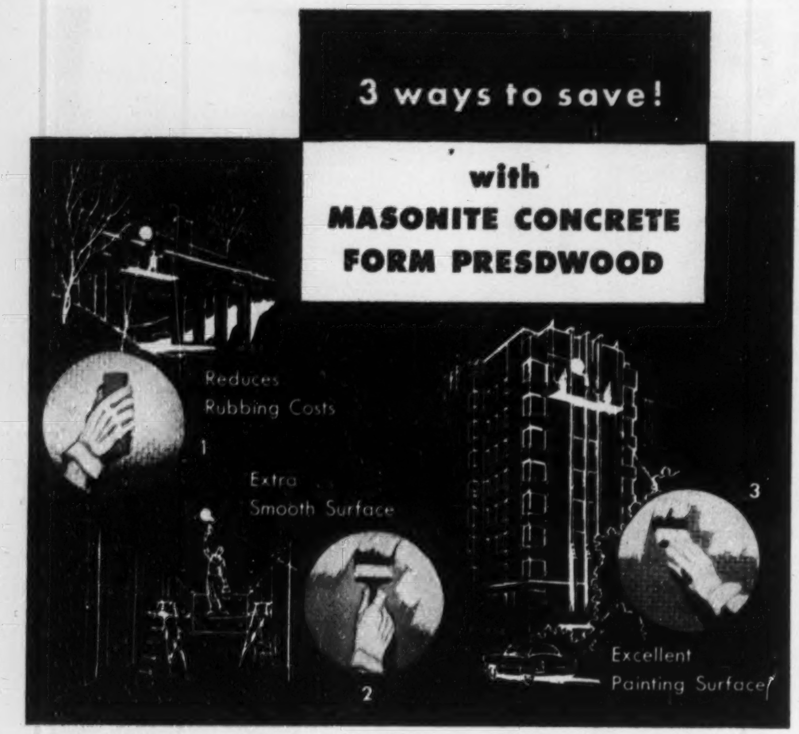
1. **Doors open up-and-out-of-the-way — not horizontally into the storage area — thus permitting storage right up to the door and above the door level.**
2. **Inner-structure nesting of opened door's leaves eliminates interference with fire protection provided by sprinkler systems.**
3. **Permits unobstructed interior lighting when leaves are opened.**

International engineers pooled their broad experience with the engineers of the Dept. of Marine and Aviation and Madigan & Hyland to give New York's newest Pier No. 57 these new-design doors. They'll welcome the chance to help you plan applications for your special needs — or to work with you on any door project. Mail coupon for comprehensive data on International's unique door service.

International Service

2010 EDGAR STREET, EVANSVILLE 7, INDIANA

INTERNATIONAL STEEL COMPANY



3 ways to save!

with
MASONITE CONCRETE
FORM PRESDWOOD

Cut costs on your very next job!

1. ***Screen side to concrete*—for even-textured surfaces**
You'll cut hand-rubbing costs as much as 50% when you pour against the screen side of Masonite Concrete Form Presdwood®. The tiny projections left on the concrete surface help the worker get an even-textured surface with less rubbing—at lower costs.
2. ***Smooth side to concrete*—for painted or unpainted concrete**
A smooth, even surface that needs almost no rubbing! No knots, grain marks or other blemishes are transferred off these strong, all wood hardboard panels. Simply smooth off the small fins at the joints and you're ready to paint—if painting is specified.
3. ***Screen side to concrete*—for painted surfaces**
Do the specifications call for architectural concrete, and painting? Pour concrete against the screen surface and you'll get an extraordinarily good bonding surface for paint. Only minimum of *rubbing required.*

Plus these Extra Advantages!

- **Low first cost...about ½ that of other smooth-surface materials.**
- **Never splits, splinters or cracks.**
- **Easily worked with carpentry tools.**
- **Can be curved for arches, columns, etc.**
- **Large 4' x 8' and 4' x 12' panels are easy to handle, create fewer fins!**

Free booklet!

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WOOD MADE BETTER
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Please send me a sample and your booklet on Concrete Form Presdwood.

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County...........................*State*...................

"Masonite" signifies that Masonite Corporation is the source of the product

NEW PRODUCTS

transmission and distribution lines, subaqueous intakes and outfalls and sewage force mains. Included are cutaway drawings of each type of pipe with sizes, weights and normal operating heads. PRICE BROS. CO., 1932 E. MONUMENT AVE., DAYTON 1, OHIO.

Steel roof deck–Specifications for Milcor steel roof deck and installation data are covered in a new catalog. Features include: a safe loading table, suggested architects' specifications, welding and insulation procedures, roof deck accessories, application details and the use of the roof deck for floor forms. Catalog No. 240. INLAND STEEL PRODUCTS CO., 4057 W. BURNHAM ST., MILWAUKEE 1, WIS.

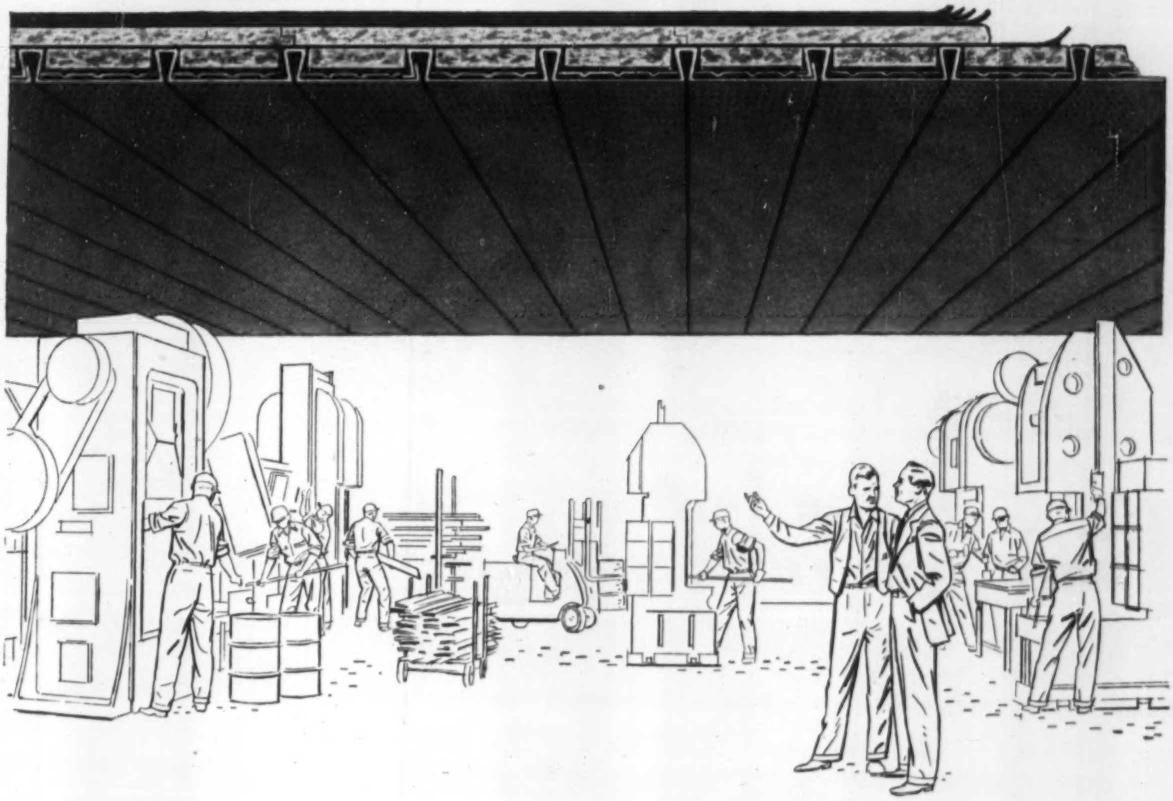
Grader operation–An instructive 20-page booklet on how to operate a motor grader is now available. While the booklet is especially pertinent to Galion grader owners and operators, much of the instructive material is applicable to training programs for improving the skill of grader operators generally. Done in a comic book style, the booklet covers the hydraulic control system, steering, tips on leaning the front wheels, proper positioning of the blade, moldboard pitch adjustments, reverse blading, bank sloping, ditching, road maintenance, turning the grader around, correct use of gear speeds, snow removal, etc. THE GALION IRON WORKS & MFG. CO., GALION, OHIO.

Hand torches–A new 36-page catalog covers the manufacturer's line of torches and tips for oxyacetylene cutting and welding. Each standard torch and tip is listed along with the necessary mixers, extensions, adapters and accessories that are used with the torches. The information is presented through illustrations, charts and descriptions. Catalog ADC 702B. AIR REDUCTION SALES CO., 60 E. 42ND ST., NEW YORK 17, N. Y.

Concrete forms–Concrete forms, concrete form ties and concrete accessories are illustrated and described in Catalog No. 160. A quick reference concrete form tie selection guide is designed to aid contractors in selecting the proper form tie to meet working load specifications. Another feature of the catalog is a form design chart and formula for developing stud, wale and tie spacings. Reinforcing bar supports and road dowel bar supports are also included in the 26-page booklet. UNIVERSAL FORM CLAMP CO., 1238 N. KOSTNER AVE., CHICAGO, ILL.

Fenestra
50
YEARS
OF BUILDING PRODUCT LEADERSHIP

*"A salute to those who made it possible"**



SILENCE IS REALLY GOLDEN . . . HERE!

Noise, Noise, NOISE. Nagging, hammering, screeching, deafening. In plant after plant, workers complain, work lags, men stay home until their heads stop ringing. Industrial noise causes a reported *$4,000,000*-a-day loss in worker efficiency.

But there's an answer—in a new *Fenestra** building idea: A combination acoustical-structural roof that costs as little as 75 cents per square foot . . . installed.

In one compact unit you get: (1) perforated light-gauge Fenestra Holorib Steel Deck which provides a smooth-finished, metal-faced interior ceiling; (2) sound-absorbing element which is also efficient heat insulation; (3) strong steel surface for support of rigid fiberboard insulation and finished roofing.

Holorib is lightweight. It saves you building time, labor, materials and money. It's practically maintenance free. But you *can* wash it or paint it time and time again without hurting its acoustical efficiency a bit. And, it's *noncombustible!*

General Motors Technical Center, Warren, Michigan; Standard Pressed Steel Company, Jenkintown, Pa.; Simmons Saw & File Company, Fitchburg, Massachusetts . . . these are just a few of the companies taking advantage of this great Fenestra development.

Write us for complete information—or have your architect write—and check on Fenestra floor panels and wall panels. Fenestra Metal Building Panels speed building and cut costs because they are a multi-purpose building material. Write Detroit Steel Products Company, Dept. ER-12, 2286 E. Grand Blvd., Detroit 11, Michigan.

*Trademark

*** Your need for a practical way to make a factory quieter encouraged us to develop Fenestra Acoustical Holorib.**

Fenestra | **METAL BUILDING PANELS**

Here are important facts for the "man behind the gun"

This White 18" Dumpy level has...

more of the features you want, yet costs you less!

BEFORE you buy, compare this White Dumpy level with a similar model of any other recognized make. From every standpoint — design detail . . . quality construction . . . work-speeding, life-lengthening features and cost — you'll quickly see why a White's the best buy you can make. It will make your work faster, easier, more accurate. Check this comparison chart:

FEATURES	D. White No. 7080	Instrument A	Instrument B
Magnifying power of telescope	35X	30X	27X
Distance away you can read 1/100 ft. graduation	1200 ft.	1050 ft.	900 ft.
Diameter of objective lens	1.81 in.	1.485 in.	1.69 in.
Field of view (in minutes of arc)	64'	52'	60'
Coated optics	YES	YES	YES
Covered leveling screws	YES	YES	YES
Can you easily replace worn leveling screws in the field?	YES	NO	YES
Sensitivity of level vial (in seconds of arc per 2mm of graduation)	20"	20"	25"
Price — complete with carrying case, tripod and accessories — F.O.B. factory	$295.00*	higher	higher

**Price subject to change without notice.*

For complete details on the 18-in. Dumpy level and other equally fine engineering instruments, see your David White dealer, or write direct to

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We offer complete, expert repair service on all makes, all types of instruments

LEGAL

When work must be done to satisfaction of owner

Where a contract provides work must be done to the owner's satisfaction, that does not mean that the owner can arbitrarily reject work properly performed. In a recent case,[1] the court stated: "The contract in the Gerling case being one in which performance was conditioned on the satisfaction of the owner, the test of adequate performance was not whether the owner ought to have been satisfied but whether she was satisfied. Singerly v. Thayer, 108 Pa. 291, A A. 230; Burke v. Daughters of Most Holy Redeemer, Inc., 344 Pa. 597,581, 26 A. 2d 460; Ehrlich v. United States Fidelity and Guaranty Company, 356 Pa. 417, 429, 51 A. 2d 794. There are, however, two limitations inherent in this principle: (1) the dissatisfaction must be genuine and not prompted by caprice or bad faith, and (2) if the work is not sufficiently completed for a reasonable determination whether it was or would be satisfactory, then the rejection was premature. Singerly v. Thayer, 108 Pa. 291, 2 A. 230; Schleicher v. United Security Life Insurance Company, 191 Pa. 477, 43 A. 380."

In the above case a contractor was employed to repair and remodel some farm houses. Before he had completed the work, the owner discharged him and employed another contractor to complete the work. The owner then discharged the second contractor, on the same grounds that she had discharged the first contractor, namely, that the work was not being done to her satisfaction. Then a third contractor was employed, who subsequently was also discharged for the same reason.

The contractors brought actions to recover for work done; the owner counterclaimed for money paid the contractors, claiming that since the work was not done to her satisfaction, she was entitled to a return of the money she had paid to the contractors.

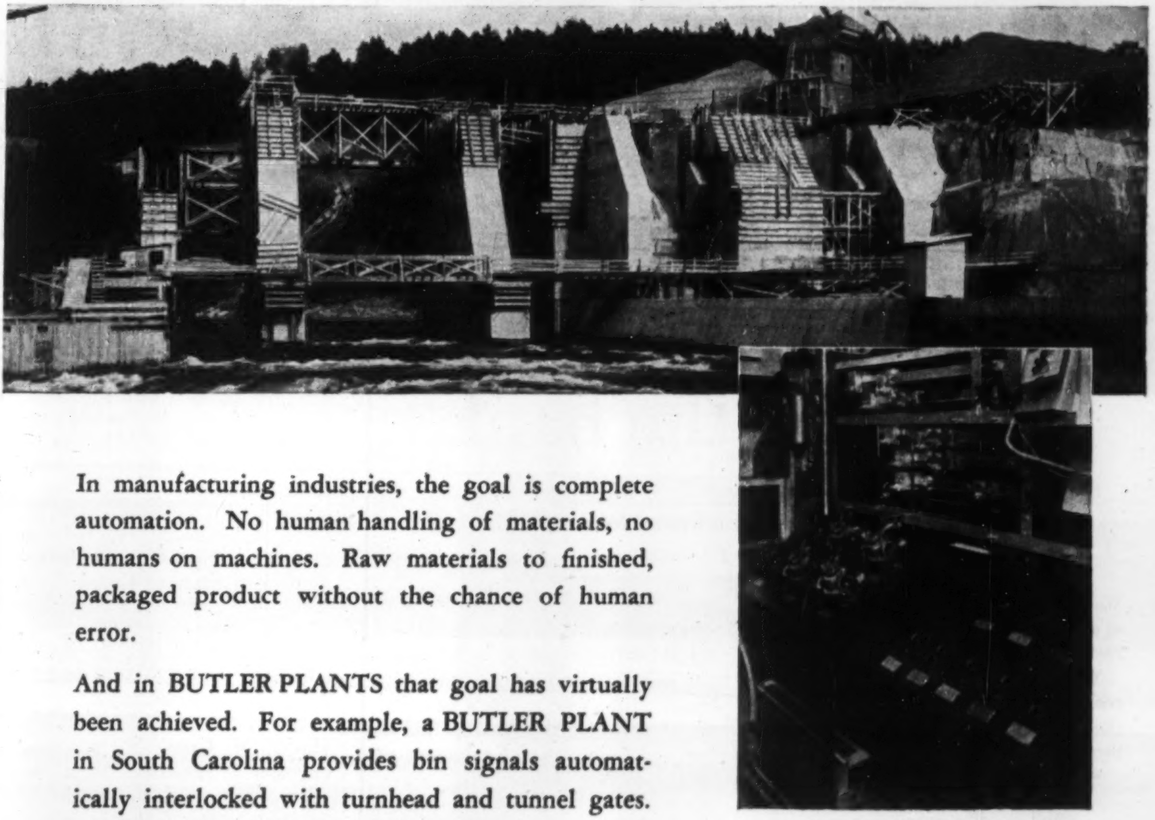
The court found in favor of the contractors and against the owner.[1] While it was true that the contractors had not substantially performed their contracts, they were discharged without being given an opportunity to remedy the alleged defects. In fact, some of the contractors were discharged without even being notified that the owner claimed the work was not being done to her satisfaction.

---

(1) Hood et al. v. Meingerel et al., 105 A. 2d 126, Supreme Court of Pennsylvania, May 24, 1954.

LOOK NO HANDS!

BUTLER CONCRETE PLANTS APPROACH ROBOT AUTOMATION



Top — Butler Central Mixing Plant on New Brunswick Dam job. One of many Butler Plants used on Canada's huge hydro-electric expansion.

Below — Butler push-button control with air operated aggregate filling and discharge gates provide labor-saving assurance of uniform batch quality.

In manufacturing industries, the goal is complete automation. No human handling of materials, no humans on machines. Raw materials to finished, packaged product without the chance of human error.

And in BUTLER PLANTS that goal has virtually been achieved. For example, a BUTLER PLANT in South Carolina provides bin signals automatically interlocked with turnhead and tunnel gates. Materials supply is *always* maintained.

And BUTLER *automatic* aggregate and cement batching is already widely and profitably used. Push button remote control can be provided in a distant dispatchers office . . . Profitable time saving . . . profitable labor saving — and an *electronic* brain never forgets.

In your new BUTLER CONCRETE PLANT let the Butler Engineer design it for maximum automation. In your present Plant call in the Butler Engineer to *install* automation at the level most profitably suited for your production and your market.

BUTLER BIN CO.

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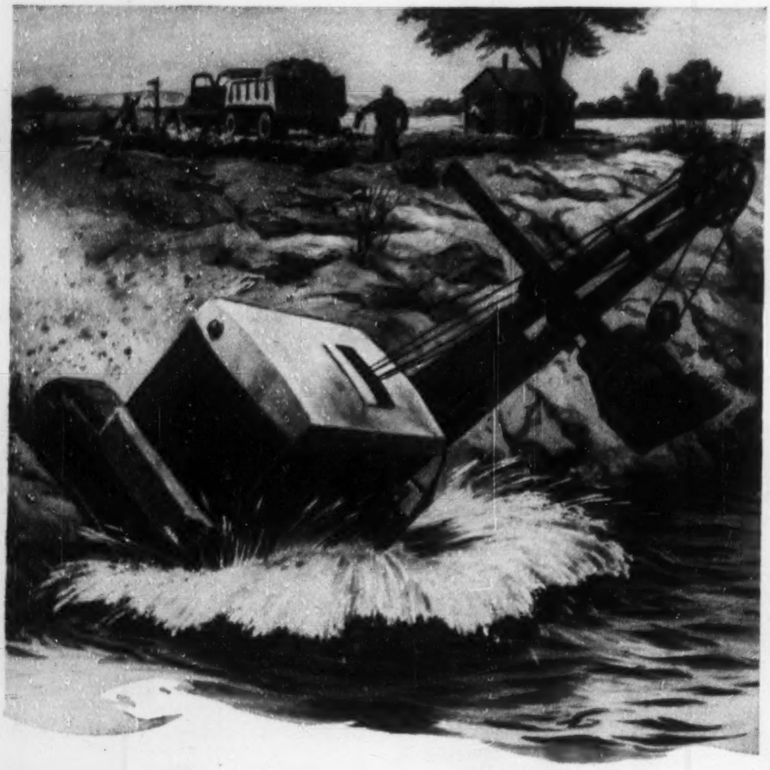
947 Blackstone Ave.
WAUKESHA, WISCONSIN



A run on the bank

... only our Hartford Contractors' Equipment Policy saved us from a heavy loss

(Based on Company File #47848)

We were excavating for a cellar. It was at a lakefront site on the top of a steep, rocky slope.

When Al backed the shovel, he didn't realize how close he was to the edge of the bank. The machine teetered at the top—and took off downhill!

Slipping over flat rocks, it picked up speed. Al couldn't stop. And it was too dangerous to try turning. He jumped just as the rig wound up in the lake.

It cost $350 to haul the shovel out. And $750 for repairs. We'd have been out of pocket $1,100—except for our Hartford Contractors' Equipment policy. It took care of both bills.

In the construction business, you never know when an accident may "sink" one of your expensive machines.

But you should know—beforehand—who's going to make good the loss. Don't let it be *you*.

A Hartford Contractors' Equipment policy covers your machines against losses caused by fire, theft, explosion, collision, overturn, windstorm, landslide, bridge collapse and many other hazards. And it covers them wherever they happen to be. On the job. In transit. In storage.

Get the full story. Call your Hartford Fire Insurance Company Agent or your insurance broker today. Have him outline a sound program of protection for *your* machines.

Year in and year out you'll do well with the

Hartford

Hartford Fire Insurance Company • Hartford Accident and Indemnity Company
Hartford Live Stock Insurance Company • *Hartford 15, Connecticut*

OBITUARIES

Clinton B. White, 67, a retired contractor of Rochester, N. Y., died Nov. 22.

Oscar H. Nelson, 69, cartographic technician who worked more than 47 years for the Geological Survey, died Nov. 23 in Washington, D. C. He received his civil engineering degree from the University of Wisconsin. His first job with the survey was as a levelman and traversman at Leavenworth, Kans. In 1942 he became senior cartographic engineer in the Washington office and later was named chief of the cartographic section.

Adam Reid, 73, former building contractor of Poughkeepsie, N. Y., died Nov. 23. He retired two years ago.

E. James Fucik, 74, authority on the design and construction of river and harbor works on the Great Lakes, died Sept. 28 in Evanston, Ill. A 1901 graduate in civil engineering from the University of Illinois, he served 18 years with Great Lakes Dredge & Dock Co., and 17 years with Fitz Simons & Connel Dredge & Dock Co. Until retirement in 1943. He was a vice-president and director in both companies.

Louis M. Gerhardt, 54, civil engineer, designer and project coordinator of a number of Eastman Kodak Co. buildings in Rochester, N. Y., died Nov. 10.

Charles F. Evans, 73, for many years a building contractor in Erie, Pa., died Nov. 12.

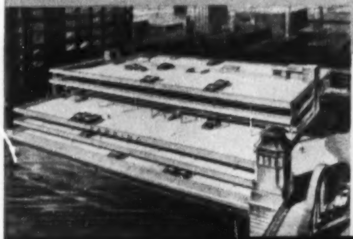
Harold N. Cross, 73, one-time city engineer at Haverhill, Mass., and for 35 years employed by Factory Mutual Insurance Co. of Boston, died Nov. 11. He was in charge of construction of the first tunnel under the Hudson River, and served as chief engineer in charge of the Yellowstone River irrigation project in Montana.

Maj. Gen. Albert C. Lieber, 59, former commanding officer of the Engineer Replacement Training Center at Fort Belvoir, Va., died Nov. 9. He had been serving as post commander at Ft. Leonard Wood, Mo. From 1938 until 1940 he was in charge of field studies and laboratory research in the office of the chief of engineers, Washington, D. C. In 1941 he was made district engineer for construction of communication routes for movement of lend-lease supplies in Iraq, Iran and adjacent areas.

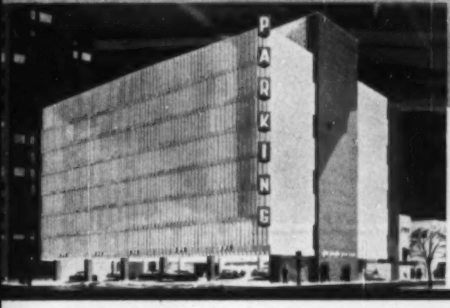
REINFORCED CONCRETE

chosen for CHICAGO's nine new parking garages

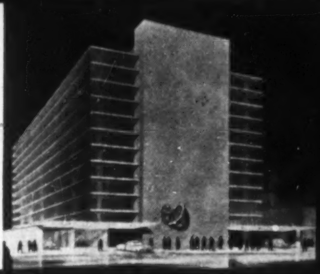
Each of the nine parking garages in Chicago's new $50,000,000 program to provide adequate parking facilities will be built of reinforced concrete. Every one of the nine architectural firms involved selected reinforced concrete. It provides greater economy, inherent fireproof qualities, weather resistance, design adaptability, attractive appearance, low maintenance costs, and availability of materials. On *your* next job, too . . . design for reinforced concrete.



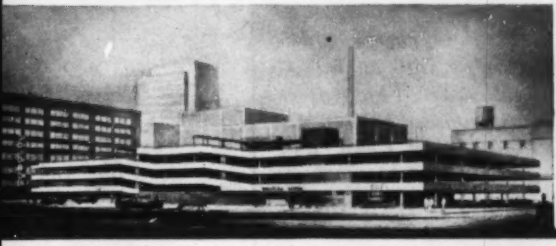
Graham, Anderson, Probst and White, Architects



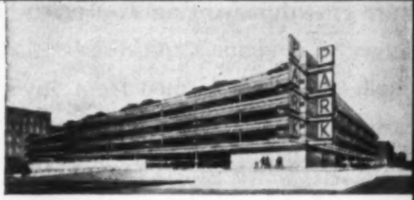
Loebl, Schlossman and Bennett, Architects



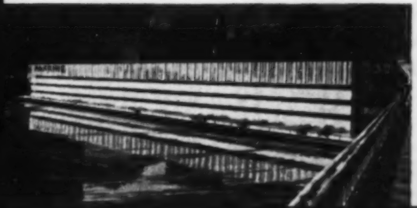
Shaw, Metz and Dolio, Architects



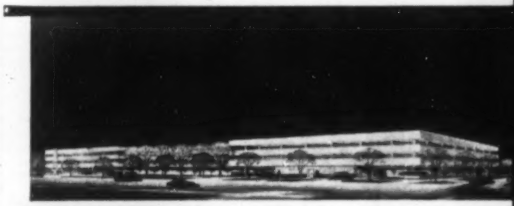
Everett F. Quinn and Associates, Architects



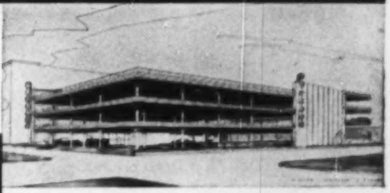
Schmidt, Garden and Erickson, Architects



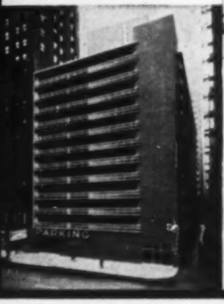
Noess and Murphy, Architects



Holabird and Root and Burgee, Architects



Friedman, Alschuler and Sincere, Architects



McClurg, Shoemaker and McClurg, Architects

CHICAGO DEPARTMENT OF PUBLIC WORKS:
George Dement, Commissioner
Dick Van Gorp, Chief Engineer
M. J. Glicken, Architect

CONSULTING ENGINEERS:
De Leuw, Cather & Co.

CONCRETE REINFORCING STEEL INSTITUTE
CRSI
FOUNDED 1924

38 South Dearborn Street • Chicago 3, Illinois

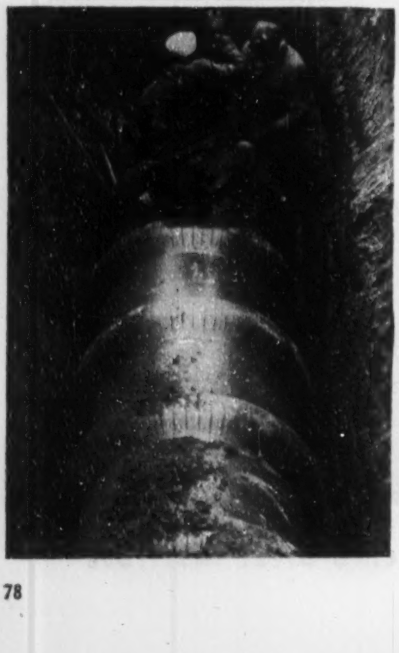
CONCRETE REINFORCING STEEL INSTITUTE

Areas in transition
from residential to industrial . . .

NEED
VITRIFIED CLAY PIPE

Large-diameter Clay Pipe is solving the sewage problems of this Detroit neighborhood, which is rapidly developing into an industrial center. The project was financed by the McLouth Steel Corp. and designed by the Engineering Department of the City of Detroit. City Engineer George Thompson and Sanitary Engineer Clyde Palmer directed the planning. George A. Odium is the contractor.

Clay Pipe is the *safe* pipe for sewerage lines that carry both residential and industrial wastes. Clay Pipe permits unlimited industrial expansion—because it handles any concentration of corrosive chemicals that future growth may bring. It protects residents from danger of epidemics and disease... is unaffected by acids and gases formed from any mixture of wastes in the line. It *never* wears out. The manufacturers of Vitrified Clay Pipe cooperate to make this fine product even better through research and testing. You can be sure you're getting the latest and best when you use Vitrified Clay Pipe.



Vitrified CLAY PIPE

CLAY PIPE NEVER WEARS OUT!

National Clay Pipe Manufacturers, Inc.
1520 18th St. N.W., Washington 6, D. C.
311 High Long Bldg., 5 E. Long St., Columbus 15, O.
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
206 Connally Bldg., Atlanta 3, Ga.

C-454-1

MATERIALS AND LABOR PRICES

Market quotations on construction materials and wage rates reported monthly by ENR correspondents
January Materials, and Labor Prices, will appear in January 6, 1955 issue

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8 x 8 x 16-in.; truckload del.: per block		CONCRETE Ready Mixed 1:2:4: over.
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	50 c.y., del.
Atlanta	$3.87	$3.56	$3.40	$2.075	$2.075	$1.83	$2.20	$2.20	$1.99	$1.99	$0.21	$0.21	$12.06
Baltimore	3.90	3.60	3.53	2.60‡a	2.60‡a	2.00‡a	2.75‡a	2.80‡a	2.65‡a	2.60‡a	.17	.17a	11.45
Birmingham	3.62	2.75e	....	2.53n	2.53n	2.08n	2.75	2.75	1.35	1.45	.165	.165	11.00
Boston	4.22	3.96	3.96	2.50a	2.50a	2.50a	1.50a	1.60a	.....	.....	.215	.245a	12.50h
Chicago	3.63	3.32	3.35	3.25‡b	3.25‡b	3.65‡b	3.25‡b	3.25‡b	2.25‡	2.25‡	.23	.23b	12.00
Cincinnati	3.85	3.55	3.63	2.19‡c	2.24‡c	2.24‡c	2.54‡c	2.54‡c	.....	.....	.205	.225a	10.95
Cleveland	N. A. in C. L.	3.19e	....	2.05f	1.85f	1.65	4.10‡a	4.10‡a	3.35‡	3.15‡	......	.22	14.40d
Dallas	3.15	2.85	2.90	2.18	2.28	1.84	2.22	2.38	.....	.....	.11e	.2675	9.40
Denver	4.24	3.94	4.24	1.85	2.00	1.20	....	....	.....	.....	.23	.255a	10.50
Detroit	3.72	3.17	3.50	4.50‡b	4.50‡b	4.00‡b	3.75‡	3.75‡	4.25‡	4.25‡	.21	.21a	12.70f
Kansas City	3.67	3.47	3.48	1.85‡	1.85‡	1.50‡a	2.00‡a	2.00‡a	.....	.....	.22a	.24c	12.75b
Los Angeles	4.72a	4.26a	5.20	2.21a	2.41a	2.21a	2.16a	2.26a	.....	.....	.135fm	.245m	11.88kh
Minneapolis	4.10h	3.79h	3.71	2.70‡ag	2.70‡ag	1.60‡ag	3.25‡ag	3.25‡ag	.....	.....	.19i	......	13.25f
Montreal	3.16ac	2.96ac	....	3.00e	3.00e	2.25	1.65ij	1.90ij	.....	.....	.20	.20a	10.55ah
New Orleans	3.50	3.17	3.48	2.44	2.44	2.00	....	....	1.45	1.65	.275	......	12.90
New York	4.01	3.70	3.53	2.85bk	2.85bk	1.90bk	2.70bl	2.70bl	.....	.....	......	......	14.05an
Philadelphia	3.58/3.97‡	3.27/3.64‡	3.58/3.63‡	2.75‡ep	2.75‡ep	2.15‡ep	2.30‡	2.40‡	2.00	1.90	.22/.25	......	12.50de
Pittsburgh	3.62	3.34	3.62	2.25‡	2.25‡	2.20‡	2.60‡	2.60‡	2.15	2.15	.22d	.28	13.00
St. Louis	3.55/3.78b	3.25/3.51b	3.40/3.57	3.10am	2.90am	2.30/2.90am	1.60j	1.70j	1.50	1.50	.22	.28ci	11.90
San Francisco	3.67	3.27	....	2.07	2.07	2.17	2.22	2.22	.....	.....	......	.28cl	12.15c
Seattle	4.80a	3.55a	5.95h	3.50‡bm	3.50‡bm	3.50‡bm	4.00‡bm	4.00‡bm	.....	.....	.25i	.3325i	12.30i

‡ Delivered. * Prices incl. dealers discount except as noted.
CEMENT: a Subj. to 10¢ dis. b Less 2% for cash. c CL price dealers discount not incl. e Truckload lots, destination price. h LCL.
SAND GRAVEL, STONE & SLAG: a Truck lots. b Per cu. yd. c 5 tons or more. e ½". f Pea gravel. g Less 5% for cash. h Less than 5 tons. i Sales tax incl. j F.o.b. quarry. k Barge lots asd. l F.o.b. scow Hudson river. m Less 2% for cash. n F.o.b. cars. o 1-3 mi zone. p Add 10¢ for ea. add'l mi zone.

CONCRETE BLOCK: a Cinder. b Waylite. c Haydite. d Celocrete e 5¼ x 8 x 12 in. f 8 x 4 x 16. g F.o.b. truck at job. i Less 2% for cash j Less 1% for cash. l F.o.b. plant San Rafael. m F.o.b. yard
READY MIXED CONCRETE: a 5 cu. yds. or over del. Man. b 25 cu. yds. or more. c 10–100 cy. brackets. d 1-3 mi. zone. e 2,000 lb comp. f 2500 lb. comp. h Less 50¢ for cash. i 5% off for cash. j 2% off for cash. k Sales tax included. l 1:2½:4. m F.o.b. yard. n Plus escalator clause. o Add 15¢ for ea. add'l 3-mi zone.

* CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 30¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn.	$2.90†	Buffington, Ind	$2.85†	Steelton, Minn	$2.95†	Muskegon, Mich	$3.00†	Toledo, O	$2.90†
Clinchfield, Ga	2.90†	Independence, Kan	2.80†	Leeds, Ala	2.75†	Saginaw, Mich	2.90†	Milwaukee, Wis	3.05†
Kingsport, Tenn	2.90†	Hannibal, Mo	2.85†	Duluth, Minn	2.95†	Wyandotte, Mich	2.90†	Green Bay, Wis	3.05†
West Des Moines, Iowa	2.95†	Northampton, Pa	2.75†	Hudson, N. Y	2.75†	Buffalo, N. Y	2.85†	Ironton, O	2.90†
Nazareth, Pa	2.75†	Universal, Pa	2.95†	Alpena, Mich	2.80†	Oswego, N. Y	3.00†	Montreal City	2.66
Bath, Pa	2.75†	Waco, Tex. (+ 10¢ tax)	2.60†	Detroit, Mich	2.90†	Cleveland, O	2.90†	W. Winfield, Pa	2.95†

† *Prices to hold for fourth quarter of* 1954.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT MC Per ton		ROAD OIL	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Per gal. Tank car	Tank car	Drums
Atlanta	$82.00	$41.00	$2.25	$26.00	$33.25	$0.215	$0.455	$0.095w	$0.185w	$0.105	$0.115	$0.225
Baltimore	150.00‡	75.00‡	.....	21.00i	.....	.085i	0.175i	.09iwE	.18iwE	.09i	.095i	0.185i
Birmingham	.....	49.50i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	22.00a	23.00a	22.00av	22.00av	.09F	.....	.09a	.10aG	.22aG
Chicago	155.00‡	85.00‡	3.45/3.55‡j	19.85b	29.85b	18.85bv	28.85bv	.094bwH	.1740bwH	.0725b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	200.00	70.00d	5.03g	23.00	.....	23.00A	.....	.1025AwF	.....	.....	.1025AG	.18AG
Dallas	e	40.00	e	24.05	43.09	.1016	.2103	28.91	50.44	.098	.1087	.1960
Denver	.....	50.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	98.00	.....	27.21	.....	27.21v	.....	.1188wI	.....	.0792	.....	.211
Kansas City	e	e	e	15.00cl	.....	15.00•	.....	.065•wJ	.....	.055c	0.11	.....
Los Angeles	e	.....	e	16.00dmx	.....	16.00dvz	.....	18.00dxK	.....	17.00dv	.0825j	.1725j
Minneapolis	.....	.....	2.97h	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montreal	.....	e	e	27.00n	39.60n	.135n	.198n	16.50nu	20.90nu	.132n	.197ns	.239ns
New Orleans	.....	.....	.....	17.50e	....o	17.50ev	....o	.085ew	....o	.0825B	.0825BL	.....
New York	.....	.....	2.75f	23.89qCD	44.32qD	22.89vtCD	43.57vtD	.1023wCDF	.1880wDF	.....	.1023CD	.1918D
Philadelphia	175.00	110.00	4.06	22.00	.....	.....	.....	.09uF	.....	.....	.....	.....
Pittsburgh	165.00	48.00	4.60	27.00	38.00	.10	.21	27.00E	40.00E	.098	.11	.224
St. Louis	.....	.....	.....	18.55f	.....	.1713	.....	.0865wM	.....	0.155	.10	.....
San Francisco	.....	55.00i	.....	17.50g	33.00gp	17.50gkv	33.00gkv	20.00gN	37.50gN	18.75v	.085y	.....
Seattle	.....	.....	.....	17.50h	38.00h	17.25hv	.....	24.50K	.....	19.75hv	.085h	.095hv

‡ Delivered.
PAVING BRICK & BLOCK: a CL. c 2⅝ x 8¼ x 4. d LCL, truck deliveries. e Not used. f 2" interior 6# treat. g 3" h 2" int., 8# treat. i 3 x 3⅝ x 8½. j 2½", 6lb. tr.
ASPHALTS: a Price at plant, Everett, Mass. b F.o.b. refinery Lockport, Ill. c F.o.b. Sugar Creek, Mo. d F.o.b. refinery, El Segunda. e F.o.b. Baton Rouge. F.o.b. Wood River or Roxana, Ill. g F.o.b. Richmond, Calif. h F.o.b. Martinez. i F.o.b. refinery, Baltimore. j F.o.b. refinery, Inglewood, Calif. k 50–110 penetr. l Less than 100 penetr. m 40/80 penetr. n Tax incl. o Drums not avail. Shipped in steel bbl. q 40/85 penetr. r In customer's drums. s Shipped in drums, per drum. t 85/200 penetr. u Per 100 gal. • Per ton. w Per gal. x Also tank trucks y F.o.b. Oakland. A F.o.b. refinery, Cleveland. B F.o.b. Destrehan, La. C Bulk. D Prices based on transporting to Manhattan via truck. E RC. F Also RC. G Also MS, SS. H RCO -5 incl. I MC 4. J MC, RC .0675. K MC 3, 4 & 5. L MS. M MC 1-5, RC 1-5, .089. N MC 3.

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton			TRACK SUPPLIES			
						Standard	Light	Re-rolled	Angle Bars	Std Spikes	Tie Plates	Track Bolts
Birmingham Area	$4.25	$4.225	$4.30	$9.25	....	$89.00	$107.00	Not available	$5.425	$7.30	$5.275	....
Chicago Area	4.25	4.225	4.30	9.25	$5.075	89.00	107.00		5.425	7.30	5.275	....
Pittsburgh Area	4.25	4.225	4.30	9.25	5.075	89.00	107.00		5.425	7.30	5.275	$11.50
Buffalo Area	4.25	4.225	4.30	9.25	5.075	89.00	107.00	....	5.425	7.30	5.275	11.50
Cleveland	....	....	4.30	9.25	5.075	......	......	....	....	....	....	11.50
Youngstown Area	....	....	4.30	....	....	......	......	....	....	7.30	....	....
Geneva	4.25	4.225	....	....	....	......	......	....	....	....	....	....
Los Angeles	....	....	....	....	5.075	......	......	....	....	7.30	....	....
Pueblo	4.30	4.70	4.75	....	....	......	95.00	....	5.425	7.30	5.275	11.50

IRON AND STEEL PRODUCTS—F. O. B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	REINFORCING BARS Per 100 lb., base price, 5 tons to carload lot: New billet	Rail steel	EXPANDED METAL LATHk Per 100 sq. yd., carload lots: Std. diamond mesh, 3.4 lb.	Std. ribbed 3.4 lb.
Atlanta	$7.31	$7.11s	$7.11s	$38.00‡	$42.00‡
Baltimore	7.02	7.06j	....	42.00	45.00
Birmingham	6.35	6.15t	6.15t	51.00p	57.00p
Boston	7.59a	7.37	7.37	42.00	46.00
Chicago	6.69	5.78gu	5.78gu	46.00‡	56.00‡
Cincinnati	7.06ak	7.06rz	....	39.00mo	43.00mo
Cleveland	7.02	5.76c	....	39.00‡	43.00‡
Dallas	9.05	7.25	7.25	49.00	52.00
Denver	8.15	7.20c	....	48.00m	63.00rm
Detroit	7.16	6.53dw	....	50.50	60.50
Kansas City	7.36a	7.57	....	41.40	46.00
Los Angeles	7.55fd	7.05	....	52.00	58.00
Minneapolis	7.15d	7.68b	7.68b	37.00	41.00
Montreal	7.50–8.00i^C/8.50–9.20^A	6.65i	6.65i	46.00h	51.00h
New Orleans	....	6.20akz	....	66.00	60.00
New York	7.48	6.85yaa	6.85yaa	42.00mo	48.00mo
Philadelphia	6.42	6.67	....	38.00‡	42.00‡
Pittsburgh	6.55	6.55z	6.55	37.60	39.60
St. Louis	7.09a	6.30c	6.30c	55.00l	56.00l
San Francisco	7.50	6.85j	....	41.50	47.50
Seattle	5.00e	6.55cj	....	53.50mr	59.50mr

Quantity extras, per cwt: under 100#, +$4; 100–399#, +$2; 400–999#, +85¢; 1000–1999#, +20¢; 2000–9999#, base price; 10,000–19,999#, −20¢; 20,000–39,999#, −40¢; 40,000# and up, −50¢

EXTRAS, per cwt—*Quantity: less than 700#, +50¢; 700–1499#, +25¢; 1500–7999#, +10¢
*Size†: #2 +$2.20; #3 +$1.10; #4 +80¢; #5 +62.5¢; #6, #7 +45¢; #8, #9, #10 +30¢
*Bending: heavy, +80¢ light, +$2 (except in New York City and surrounding metropolitan area where bending must be done on the job)
*Engineering (details and placing from designs by others): over 500 tons, +45¢; 200–500 tons, +50¢ but not over $4500; 20–200 tons, +60¢ but not over $2000; 5–20 tons, +70¢ but not over $240; under 5 tons, +85¢ but not over $70
*Design only: +60¢

WELDED FABRIC REINFORCING—Per 100 sq. ft., carload lots fob mill

4 × 16 in., No. 5 & 10 wires—Joliet, Ill., Donora, Pa., Monessen, Pa. $3.18
4 × 12 in., No. 8 & 12 wires—Joliet, Ill., Donora, Pa., Monessen, Pa. $2.08
6 × 6 in., No. 6 & 6 wires—Joliet, Ill., Donora, Pa., Monessen, Pa. $3.33

*‡ Delivered *a 2000–9999# *b 10,000–15,999#, fob city *c 20 tons or over *d 10,000–19,999# *e fob plant *f incl. delivering in free zone *g CL *h list price; dominion tax exempt; add provincial and municipal taxes *i add dominion, provincial and municipal sales taxes *j intermediate and hard grade *k fob city *l delivered; contractor to do unloading *m copper alloy *n LCL *o asphalt coated *p del. of 500 sq. yd. or more *q 4# per sq. yd. *r 2% off for cash *s add 2.5¢ switch *t add 5¢ switch, 15¢ del. *u add 6.25¢ switch *v incl 15¢ del. *w add 20¢ del. *x add 5¢ switch *y add 30¢ del. *z add 10¢ del. *aa Prices beginning Aug. 1 based on Morrisville, Pa.; previously based on Sparrow Pt., Md. Decrease in freight costs due to switch in mill base offset mill price rise July '54. *A American made. *C Canadian made. † Number system replaces inch system of classifying bar sizes. New system is based on number of eighth inches in diameter of bar.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE Per net ton f.o.b. 6 in. to 24 in.a	ASBESTOS CEMENT PIPE per lin. ft. f.o.b. city: 6" Pr Cl. 150	12" Sew Cl. I	VITRIFIED SEWER PIPE Per foot, Delivered ASTM C13-44T: std. 8 in. s.s.	std. 12 in. s.s.	24 in. ds.	36 in. ds.	CLAY DRAIN TILE ASTM C4-24 Per 1,000 ft., carload lots, f.o.b.: 6 in.	8 in.	CONCRETE SEWER PIPE Per ft., delivered: ASTMC 14-41: 12 in.	24 in.
Atlanta	$101.00	$1.45	$2.42	$ .545	$1.27	$4.82	$12.925	$248.00	$356.00	$0.90m	$3.40m
Baltimore	121.50	1.45	2.42	.546	1.053	4.275s	11.3775	178.20	274.80	.95	2.60
Birmingham	103.00	1.45	2.42	.42	.75	2.99	....	250.00‡	375.00‡	1.25m	2.75m
Boston	122.00	1.47	2.20	.553qrt	1.0665qrt	4.365qrt	12.00qrt	187.80r	289.20r	1.62mg	3.95mg
Chicago	107.00	1.45	2.20	.70m	1.35m	5.62m	13.50m	150.00‡	270.00‡	.80	2.80
Cincinnati	106.00	1.47	2.29	.581s	1.120t	4.64t	12.20t	225.00	350.00	.80m	2.95m
Cleveland	108.00	1.47	2.29	.49s	.945s	3.96s	10.66s	158.00m	245.65m	.85m	3.25m
Dallas	112.00	1.47	2.54	.439	.799	4.00b	9.17b	......	......	.49	1.60
Denver	115.00	1.53	2.54	.45n	.78n	3.48n	....	......	......	.74m	2.50m
Detroit	108.00	1.47	2.29	.75	1.45	5.75	15.50	230.00m	350.00m	.86	3.47
Kansas City	113.00	1.47	2.29	.53	.945	3.87	10.60	250.00	480.00	.80	3.25g
Los Angeles	129.65	1.53	2.20	.67l	1.46l	5.97l	14.89l	228.20l	348.90l	.95	2.75f
Minneapolisw	112.00	1.49	2.42	.75mo	1.36mo	5.60mo	....	......	......	1.42h	4.05h
Montreal	110.00	....	....	1.07u	1.73u	5.52u	8.93u	......	......	1.17h	3.11j
New Orleans	101.50	1.45	2.42	.48	.875	4.69	....	280.00p	460.00p	.65	2.29
New York	111.35	1.47	2.20	.66	1.28	5.08	13.42	......	......	1.15	3.00
Philadelphia	110.00	1.45	2.20	.65	1.25	4.95v	12.65v	300.00‡	350.00‡	1.60h	3.95h
Pittsburgh	110.00	1.47	2.20	.468m	.864m	3.86m	9.78m	152.00	244.00	1.05h	2.50h
St. Louis	112.00	1.45	2.29	.56	1.03	4.22	9.80	180.00l	380.00l	1.25il	2.70il
San Francisco	127.00	1.53	2.20	.61d	1.41d	5.78d	14.32d	235.00l	392.00l	1.05n	3.30n
Seattle	122.00	1.54	2.40	.51b	.91b	....	....	150.00e	......	.85k	2.75k

*WROUGHT STEEL PIPE (Full standard weight) Discount from list; see footnote

Mill	2½ & 3 in., Butt Weld† Black %	Galv. %	3½ to 6 in., Lap Weld† Black %	Galv. %
Lorain, Ohio	34.25	17.00	....	....
Aliquippa, Pa.	34.25	17.00	22.50a	10.25a
Sparrows Pt., Md.	32.25	15.00	20.50a	2.75
Benwood, W. Va.	34.25	17.00	24.25d	6.50d
Youngstown, O.	34.25	17.00	....	....
Indiana Harbor, Ind.	33.25	16.00	24.50ab	6.75a
Sharon, Pa.	34.25	17.00	....	....
Wheatland, Pa.	34.25	17.00	25.50a	7.75a
Etna, Pa.	34.25b	17.00	24.25d	10.00d
Fontana, Calif.	21.25b	4.00b	12.50ab	+5.25ab

† Threaded and coupled. a 3½ to 4 in. b Continuous weld. c 5 and 6 in. d 6 in.

*‡ Delivered *a Class B & heavier. Based on existing freight rates; subject to rate change. Gas pipe and class A, $5 per ton additional. 4 in., $7 per ton additional. 30 in. and larger, usually, $1 per ton less. *b Extra strength ASTM C 200–44T *c 4-in., $90 *d SS361-A *e 30-in. *f 21 in. *g culvert pipe; reinforced, ASTM C 76–41 *h reinforced, ASTM C 75–41 *i reinforced, ASTM C 76–37 *j centrispun; no standard specs. in Canada *k 2% off for cash *l fob plant *m truck delivery *n LCL delivered, fob truck *o listed price based on LCL (no min.) *p freight allowed to destination in city *q ASTM C 13–40 *r CL fob origin, freight allowed *s 2 ft lengths *t 3 ft lengths *u CESA A 60–1941 specs. used *v standard strength *w 6 in., $1.67 per ft., Class 150, CL, fob track

* WROUGHT STEEL PIPE: Deduct discounts shown above from the following standard list consumers carload prices to get mill price. List prices per ft. (based on approx. $200 per net ton): *Butt Weld* ⅛ in., 5½¢; ¼ in., 6¢; ⅜ in., 6¢; ½ in., 8½¢; ¾ in., 11½¢; 1 in., 17¢; 1¼ in., 23¢; 1½ in., 27½¢; 2 in., 37¢; 2½ in., 58½¢; 3 in., 76½¢. *Lap Weld* 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Add freight rates plus 3% transportation tax to get destination price.

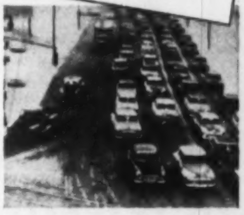
WROUGHT IRON PIPE: List prices per ft. same as for wrought steelpipe, but add following "discounts" to get Pittsburgh mill price: *Butt Weld* — 1 in. black, + 32.75, galv. + 61.0; 1¼ in. black, + 32.75, galv. +60.50, 1½ in. black, + 29.25 galv. + 56.75; *Lap Weld* — 2½ in. to 3 in. black + 33.50 galv. + 59.5; 4½ in. to 6 in. black + 30.50 galv. + 54.75. Add freight rates plus 3% transportation tax to get destination price.

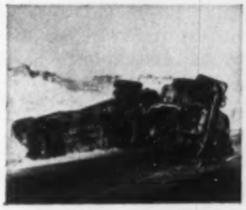
REPORT ON WINTER OF 1953-54!

How
STERLING
AUGER-ACTION
ROCK SALT
helped save over 100 TIMES* the total cost of DETROIT'S ice and snow-control program

*Figures courtesy Glenn C. Richards, Commissioner Department of Public Works, Detroit, Mich.

Here's What Happened When The Motor City Fought 35 Snow Storms With STERLING *Auger-Action* ROCK SALT





MINIMIZED EMPLOYEE LATENESS AND ABSENTEEISM

City experts agree that each of Detroit's 35 snow and ice storms, *without* rock salt's prompt action, would have meant an average ½ hour delay per employee in to-work transportation. $55,638,205 in *saved* man hours! Impassable streets would have cost retailers an estimated $26,342,500! And Detroit Street Railways would have lost more than $2,000,000 in uncollected fares. A total estimated saving of $83,980,705!

SAVED MILLIONS FOR DETROIT TRUCKERS, TOO

Detroit's Trucking Association reports a normal *full day's work* throughout the city's 35 storms last year. If streets had remained snowbound or slippery, they would have had only an average of a *half* day's work for a full day's pay—plus gasoline and maintenance costs. Estimated savings—*seven million dollars!*

HELPED LOWER AUTO LIABILITY AND COLLISION INSURANCE RATES

Though other factors besides the city's "Bare Pavement" policy entered into it, the fact remains that Detroit's liability and collision insurance rates are only about one-half those of other cities of comparable size which do *not* use straight rock salt ice-and-snow-control methods.

IN MAN-HOURS IN DOLLARS **STERLING** *AUGER-ACTION* **ROCK SALT** **COSTS LESS SAVES MORE**

City, County, State Highway Officials!
SEND THIS COUPON TODAY!

International Salt Co., Inc., Scranton 2, Pa.
The Detroit Report interests me. Would like to know how Sterling *Auger-Action* Rock Salt might effect similar savings in our program. Please have representative call.

Name ______________________ Title ______

Department ______________________

Address ______________________

City ______________ Zone ____ State ______

MATERIALS AND LABOR PRICES

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F.O.B.

SHORT LEAF YELLOW PINE AND DOUGLAS FIR
All S. L. Y. P. is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)
All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1 Lengths up to 20 ft. (Prices in italics)

LONG LEAF Y. P. Merchantable grade up to 20 ft.

PLYWOOD Rail freight increment (See note for base price)

		Short Leaf Y. P. and Douglas Fir									Long Leaf Y. P.		Plywood	
		1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh	2x12 Rgh	12x12 Rgh	⅝"	¾"
Atlanta	†	**$77.00**	**$80.00**	**$73.50**	**$74.00**	**$77.50**	**$81.00**	**$79.00**	......	......	......	......	$22.32	$27.24
Baltimore	*	**90.00**	**95.00**	**87.00**	**88.00**	**91.00**	**98.00**	**102.00**	......	......	**$160.00**	**$170.00**	25.92	31.60
		122.00g	*122.00g*	*125.00g*	*122.00g*	*122.00g*	*120.00g*	*120.00g*	*$135.00*	*$135.00*	......	......	.....	.....
Birmingham	†	**77.50**	**79.50**	**73.50**	**80.50**	**86.00**	**85.50**	**95.50**	......	......	**115.50**	**155.50**	21.78	26.58
		105.00	*105.00*	*108.50*	*108.50*	*108.50*	*108.50*	*108.50*	*108.50*	*108.50*	......	......	.....	.....
Boston	*	**95/103a**	**100/112a**	**90/102a**	**93/107a**	**100/112a**	**104/114a**	......	......	......	......	......	25.92	31.60
	*	*88.00n*	*88.00n*	*111/113*	*111/113*	*111/113*	*111/113*	*115.00*	*116.00*	*116.00*	......	......	.....	.....
Chicago	**	**98.00**	**101.00**	**90.00**	**105.00**	**112.00**	**115.00**	**110.00**	......	......	**139.00**	**139.00**	22.45	27.37
		108.00	*108.00*	*108/110*	*110.00*	*112.00*	*112/114*	*120.00*	*120.00*	*120.00*	......	......	.....	.....
Cincinnati	*	**91.00**	**92.00**	**80.00**	**88.00**	**92.00**	**100.00**	**107.25**	......	......	**128.00**	**128.00**	25.00	30.48
		96.50	*93.25*	*105.50*	*104.50*	*105.50*	*104.50*	*130.25*	*130.25*	*130.25*	......	......	.....	.....
Cleveland	**	**100.00**	**102.00**	**96.00**	**104.00**	**104.00**	**104.00**	......	......	......	......	......	25.37	30.93
		......	......	*104.00*	*107.00*	*107.00*	*107.00*	*119.50*	*119.50*	*119.50*	......	......	.....	.....
Dallas	k†	**70.00**	**80.00**	**65.00**	**60.00**	**60.00**	**60.00**	**130.00**	......	......	**130.00**	**130.00**	18.72	22.80
Denver	*	*Not in stock*		*117.00*	*118.00*	*118.00*	*118.75*	*125.00*	*137.75*	*140.50*	......	......	13.92	16.98
Detroit	‡	**112.00**	**116.00**	**105.00**	**112.00**	**118.00**	**118.00**	......	......	......	......	......	25.00	30.48
		80.50	*95.50*	*100.50*	*100.25*	*99.25*	*101.75*	*114.50*	*116.00*	*117.00*	......	......	.....	.....
Kansas City	*	**110.00**	**110.00**	**110.00**	**110.00**	**110.00**	......	......	......	......	......	......	16.56	20.16
		122.00	*122.00*	*125.00*	*125.00*	*125.00*	*132.00*	*170.00*	*170.00*	*170.00*	......	......	.....	.....
Los Angeles	1	*97.00*	*97.00*	*97.00*	*97.00*	*97.00*	*97.00*	*128.00*	*138.00*	*128.00*	......	......	16.61ab	20.25ab
Minneapolis	#	*145.00*	*145.00*	*145.00*	*145.00*	*145.00*	*145.00*	*165.00*	*165.00*	*165.00*	......	......	19.89	24.25
Montreal	ab	**88.00**	**97.00**	**88.00**	**88.00**	**100.00**	**118.00**	**105.00**	......	......	**99.50**	**99.50**	.....	.....
		165.00	*165.00*	*165.00*	*165.00*	*165.00*	......	......	......	......	......	......	.....	.....
New Orleans	†	**100.00**	**100.00**	**92.50**	**85.00**	**90.00**	**94.00**	**118.00**	......	......	**150.00**	**148.00**	18.72	22.80
	†	*106.50*	*106.50*	*115.00*	*116.50*	*116.50*	*116.50*	*115.00*	*122.00*	*122.00*	......	......	.....	.....
New York	*	**110.00**	**113.00**	......	**120/125**	**120/125**	......	**155/165**	......	......	**225.255**	**225/255**	25.92	31.60
				Range from $122.50 to $127.50				......	*150/160*	*150/160*	......	......	.....	.....
New York	**	**93.75**	**92.25**	......	**94.00**	**95.00**	**98.50**	**92.50**	......	......	**175.00**	**240.00**	.....	.....
		96.00	*96.00*	*104.00*	*105.00*	*105.50*	*106.50*	*106.00*	*127.00*	*127.00*	......	......	.....	.....
Philadelphia	‡		**Range from $110 00 to $127 00**				**110/127**	**110/127**	......	......	**210/220**	**210/220**	'25.92	31.60
			Range from $128 00 to $165.00				*125/132*	*133/155*	*150.00*	*150.00*	......	......	.....	.....
Pittsburgh	†		**Range from $95.00 to $100.00**					**120.00**	......	......	**120.00**	**130.00**	25.92	31.60
		120.00	*120.00*	*120.00*	*120 00*	*120.00*	*120.00*	*125.00*	*145.00*	*145.00*	......	......	.....	.....
St. Louis	#e	**112.50e**	**114.50e**	**109.00d**	**121.00d**	**127.00**	**132.00**	......	......	......	......	......	18.72	22.80
		......	......	*114.50*	*122.50e*	*122.50e*	*124.50*	*169.50e*	*162.50*	*174.50*	......	......	.....	.....
San Francisco	A†	*85.00*	*85.00*	*87.00*	*86.00*	*84.00*	*82.00*	*82.00*	*85.00*	*85.00*	......	......	12.22	14.91a
Seattle	†	*72.50*	*72.50*	*72.50*	*72.50*	*72.50*	*72.50*	*76.00* ¬	*82.50*	*82.50*	......	......	.....	.....

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd.

LUMBER: **Bold Face type, Southern Pine.** *Italics, Douglas Fir.* a Spruce b Tax exempt. c 5M lots. d 8–12 ft. lengths. e 8–16 ft. lengths. g No. 1 common. i 8 ft. lengths. k No. 3 common. n #3. A Rail freight rate from North west mills to San Francisco are $11.50 to $15.00 per M ft bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock.

For rough, add $3.00 to above figures.

PLYWOOD: Plyform grade Fir Plywood, 4′ by 8′ panels, 5-ply, sanded 2 sides, water resistant glue, carload lots, delivered per 1,000 sq. ft. surface. Seattle base price on ⅝", $171.00; on ¾", $191.00. Exterior plyform ⅝" $190.00, ¾" $212.00. For other centers add rail freight increment from table on proper size Oiling and edge sealing charges included. a Lower rate by water shipment b 50,000 lb. minimum.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a Single or Double Thickness A quality	 B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	79%	80%	$0.2365
Baltimore	78%d	80%d	.2365
Birmingham	83%	83%	.1840
Boston	77–10%	77–10%	.2365
Chicago	76%	76%	.2365
Cincinnati	76%	76%	.2365
Cleveland	76–10–10%	76–10–10%	.2765
Dallas	75%	75%	.2440
Denver	79%	79%	.2415
Detroit	76–10–10%	76–10–10%	.2365
Kansas City	80–10%	80–10%	.2415
Los Angeles	78%	78%	.2390
Minneapolis	75–10%	75–10%	.2415
Montreal	40–5%bc	40–10–5%b	21.35h
New Orleans	78%	79%	.2415
New York	80–10%	80–10%	.3975g
Philadelphia	77%	79%	.2365
Pittsburgh	80%	80%	.2090
St. Louis	80–10%	80–10%	.2415
San Francisco	70%	70%	.2365
Seattle	78%	76%	.2390

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U.S.; $1.75 per 100 lbs. higher in Canada.

Glass; a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. b Discount from list, Apr. 1951; sales tax included, but 6% tax exemption not allowable for. c Single thickness. d Discount 6/15/52.

Explosives; * Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. g In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. h F.o.b. Beloeil (near Montreal), per 100 lb. forcite, 40%. Forcite 60%, $23.10.

40% Ammonia Gelatin price ranges in other than urban areas, per lb.
(except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E. of the Miss., except Fla. and Me.	$0.184	$0.2165	$0.2365
W. of Miss. to Rocky Mtn. States, Fla. and Maine	.189 – .1965	.2215–.229	.2415–.249
Rocky Mtn. States	.189 – .2015	.2215–.229	.2415–.254
Pacific N. W. States	.1865–.199	.219 – 2315	.239 – .2515
Pacific S. W. States	.184 – .1915	.2165–.219	.2365–.2415

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	 Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in.— 2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in.— 2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in.— 2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.— 3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in.— 2-ft. from butt	8-in.	50 to 69-ft.	.50/.68	....
14-in.— 2-ft. from butt	6-in.	70 to 79-ft.	.78/.83	.93
14-in.— 2-ft. from butt	5-in.	80 to 85-ft.	.83/.98	.94
14-in.— 2-ft. from butt	5-in.	85 to 89-ft.	....	1.00
14-in.— 2-ft. from butt	5-in.	90 to 100-ft.	....	1.03

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie for carload lots;

		6"x8"x8' Untr.	 Tr.	7"x9"x8'6" Untr.	 Tr.
Boston	Oak ii	....	....	....	....
	Pine	....	....	....	....
New York	S. L. Sap Pine	$2.00	$4.00	$3.00	$5.00
	Mixed Oak	2.50	4.50	3.50	5.50
Birmingham	Hardwood	2.40	3.88a	2.85	4.58a
Chicago	Red Oak	....	3.20a	....	4.10/4.20a
Los Angeles	Douglas Fir	...	....	....	....
	Redwood	....	....	....	....
Philadelphia	Red Oak	2.55	3.90	3.45	5.10
St. Louis	White Oak	2.20	....	2.50	....
	Red Oak	2.10	2.65a	2.35	3.05a
	Sap Pine or Cypress	....	2.55a	....	2.90a
San Francisco	Douglas Fir	2.08ef	3.08af	2.73bf	3.93caf
Montreal	Birch or Maple	....h	....h	....h	....h

Tr.— Treated; Untr.— Untreated. a Creosoted. b 7" x 9" x 8′. c Empty cell. e Green. f F.o.b. cars. h No constant price available. i Not available.

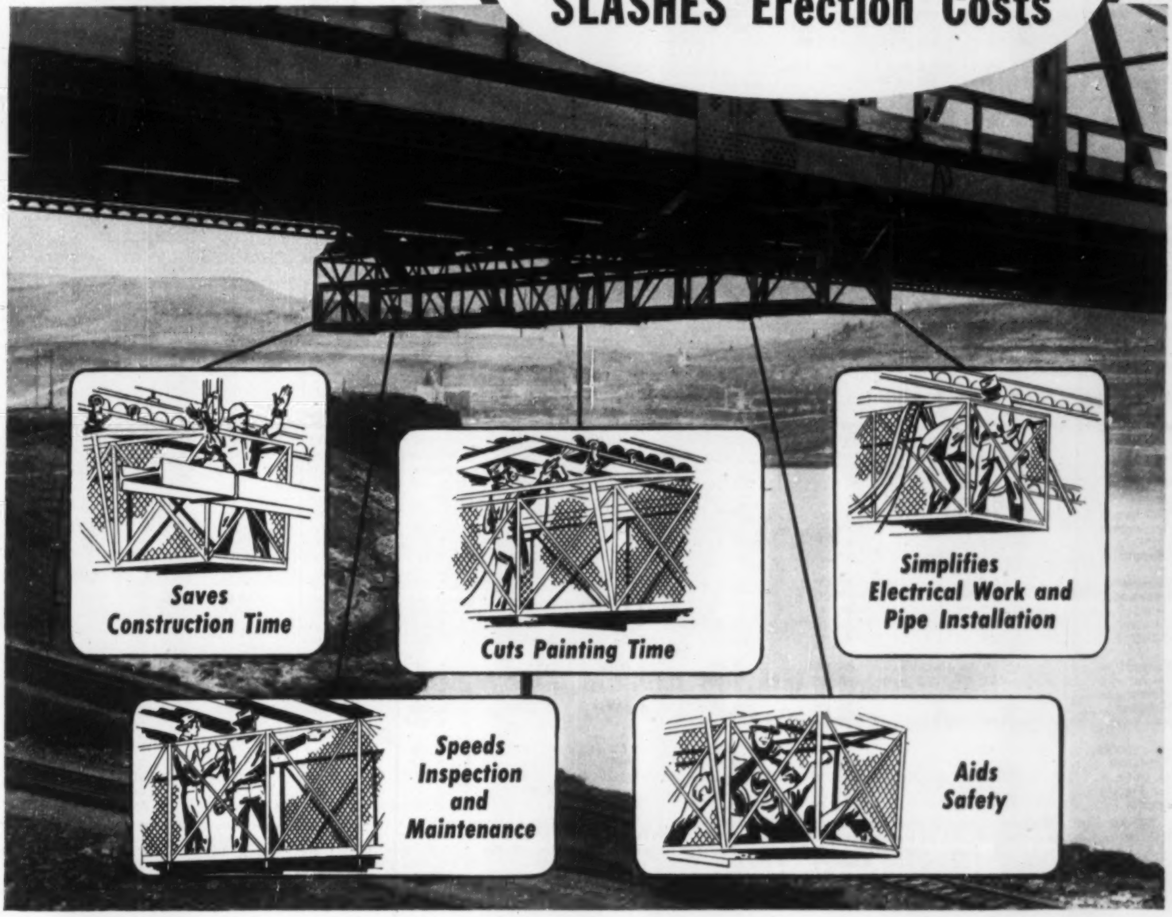
CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.095
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	27.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	2.30
Soda ash, 58%, in paper bags, per 100 lb. dense	1.70
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	1.85
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	10.35

Illustrated is one of six Cleveland Tramrail Travelers on the Dalles Bridge over the Columbia River. Traveler length is 37'-6". Operation is by handwheel drive. Complete fence enclosure assures maximum safety.

TRAMRAIL
Bridge Traveler
SLASHES Erection Costs


Saves Construction Time
Cuts Painting Time
Simplifies Electrical Work and Pipe Installation
Speeds Inspection and Maintenance
Aids Safety

BIG savings in time and money can be made with a Cleveland Tramrail bridge system both during erection and later for inspection and servicing.

Advantages that the equipment provides for erection work alone usually justify its installation by a bridge contractor — even if not called for in the specifications. Time saved in many phases of bridge construction makes the equipment profitable. The savings do not stop with the completion of a bridge. They continue year after year by reducing man-hours required for inspection, painting and miscellaneous servicing work.

It will pay you to look into the possibilities that a Cleveland Tramrail Bridge System offers for new bridges to be built, as well as for existing ones.

CLEVELAND TRAMRAIL
ENGINEERING AND APPLICATION DATA

GET THIS BOOK!

BOOKLET No. B-2008. Packed with valuable information. Profusely illustrated. Write for free copy

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
3188 East 284 St. *Wickliffe, Ohio.*

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION — SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE — LOAD BEARING — SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity Common backing	Straight hard	LIME Per ton, in paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized, or lump
Atlanta	$195.00	$207.00	$247.00	$327.00	$342.00	$381.00	$27.38	$27.38	$19.00	$17.50	$.....
Baltimore	186.00	198.35	372.00	421.50	549.00	627.00	36.00k	41.00k	32.00	21.50	.....
Birmingham	126.00p	136.00n	......	284.00p	......	......	26.50ff	32.50gg	29.25	24.00	.....
Boston	196.00†	209.00†	392.00†	283.25†	......	......	36.85p	39.85p	30.00†	28.00†	.....
Chicago	135.00	145.00	280.00	......	......	......	26.00	28.00	31.00	27.00	.....
Cincinnati	185.00j	195.00j	260.00jdc	......	......	......	45.00j	46.00j	26.00j	26.00j	.....
Cleveland	170.00**	181.00**	......	......	......	......	34.50	34.50	28.25	23.25	32.00ee
Dallas	......	118.00	......	......	......	......	19.75	32.25	32.00	21.80	.....
Denver	......	......	......	......	......	......	34.00	41.00	34.80bb	28.00bb	34.00bb
Detroit	180.00	188.00	259.00	......	315.00	360.00	37.75cc	38.50cc	34.00	30.00	.....
Kansas City	127.50	147.50	270.00	270.00	340.00	400.00	28.50	.....	32.00	26.00	28.50
Los Angeles	r	r	r	r	r	r	27.50§	.....	34.00	34.00	35.00
Minneapolis	175.00p	196.00p	407.00p	196.00p	......	......	35.00vp	45.00	40.00bbe	30.00bbe	42.00bbde
Montreal	165.00aq	181.00au	325.00au	230.00	248.00e	......	39.50	46.00	34.80	22.00	13.75u
New Orleans	170.00	170.00	310.00	380.00	......	......	31.00	.....	.....	28.00	28.00
New York	147.30h	157.10h	216.00ch	238.10hn	......	......	40.00	.....	36.00	32.00	.....
Philadelphia	156.30	166.80	312.70	375.20	......	......	30/34	35/42	25.00	23.00	2.97
Pittsburgh	138.00	151.00	260.00	228.00	297.00	341.00	36.00	46.00y	25.00	23.00	2.97m
St. Louis	147.00cc	168.50cc	338.25cc	465.00cc	439.00	621.50	40.00el	38.50s	.90eaa	.75eaa	1.25aaspee
San Francisco	156.85a*	177.10a*	235.30dda*	......	......	......	37.00	.....	26.60	26.60	2.65m
Seattle	223.00cc	230.00cc	320.00	240.00ccw	......	......	34.00s	49.00s	42.00shh	37.50	3.90mhh

† F.o.b. yard Roxbury. *a* Smooth. *b* Per 50 lb. bags. *c* 6 x 12 x 12 in.-3 cell. *d* Pulverised hot. *e* 5%, 10th following month. *g* 5½ x 8 x 12. *h* F.o.b. trucks, job site N.Y.C. *j* Truck load or over. *k* $1.00 discount *l* Red face. *m* Per bbl., 180 lb. *n* 7½ x 7½ x 12. Speed title. *p* Truck lots. *q* Provincial and Municipal tax extra. *r* Not used because of earthquake danger. *s* 2% discount for cash. *t* 5½ x 8 x 11½. *u* Tax exempt. *v* Sand lime. *w* 5 x 8 x 12. *y* Stacked. *z* Pebble lime price per 80 lb. sack. *aa* Price per sack. Lime not sold per ton. *bb* LCL. *cc* Truck delivery. *dd* 6 x 12 x 12. *ee* Pebble lime. *ff* 80% common. *gg* Select. *hh* LCL. § F.o.b. yard. ** Warehouse delivery. * F.o.b. Stockton.

PAINT, ROOFING—F.O.B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600-lb. (Approx.) bbl. Dry *a*	WHITE LEAD Per 100 lb. in 100 lb. cases in oil *w*	READY-MIXED PAINT Per gal., drums Graphite *b*	Aluminum *c*	Ferric Oxide *d*	ROOFING SUPPLIES; Carload lots f.o.b. factory Rolls, slate surfaced, 85-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 380 lb. bbl. per ton
Atlanta	$17.75	$28.275	$3.26	$3.51	$3.01	$2.74	$3.01	$2.98	$0.405	$39.75
Baltimore	17.50	27.90	2.75	4.25	3.35	2.66	4.43	4.43	.47	45.00
Birmingham	17.75	28.275	3.90	3.40	....	2.93	2.93	2.93	....	42.00ee
Boston	17.50	27.90	....	....	....	2.97gg	2.82og	2.82og	.42o	50.50g
Chicago	17.50	27.90	....	....	....	2.91‡u	2.86‡o	2.86‡o	40.00‡bbr	50.00‡
Cincinnati	17.50	27.90	....	....	....	2.65	2.46	2.46	.46y	49.36
Cleveland	17.50	27.90	2.27pgg	2.53gg	2.57gg	2.65q	2.46o	2.46o	.40y	42.70hh
Dallas	17.75	28.65	....	4.05	....	3.50q	3.75o	4.35o	.36	58.50hh
Denver	18.00	28.40	3.29	5.15	3.04	2.65	2.25o	2.35o	.43ff	45.00
Detroit	17.50	27.90	2.35	3.25	2.50	2.65	2.46f	2.46	.50	44.00
Kansas City	17.50	28.65	3.45	3.00ye	2.65	3.32	3.00o	3.00o	.43	57.00
Los Angeles	17.50	28.15	3.30s	4.50s	4.20s	3.10s	2.00es	l	.64s	l
Minneapolis	17.50	29.88/28.02	....	....	....	2.65sdd	2.46hidd	2.46hidd	.44idd	44.00r
Montreal	....	20.95	2.95DFI	4.05EFI	3.25FI	4.00t	3.65tf	3.65t	1.06bt	3.30kt
New York	17.50	27.90	....	....	....	2.65#	2.46#o	2.46#o	.44#z	44.00*
Philadelphia	17.50	27.90	3.25	3.65	3.15	2.54	2.94	2.94	.37	26.00
Pittsburgh	17.50	27.90	2.65	2.85	3.15	2.75	2.60o	2.60o	.38	49.00
St. Louis	17.50	27.90	....	....	....	2.50	2.46h	2.46h	.40y	48.45
San Francisco	17.50	28.15	2.40	....	3.40	2.95	4.00aa	....	.49	.....
Seattle	17.50	28.40	3.07mcc	2.93mcc	....	3.58mocc	3.05hmcc	....	.59mcc	52.00mcc

‡ Delivered. Note: Red lead in oil 50c higher than white lead in oil. *a* Red lead prices change frequently due to pig lead price changes. *b* U. S. War Dept. Spec. 3-49A. *c* ASTM Spec. D266-31. *d* 80% minimum ferric oxide. *e* 15 lb. *f* Per 432 sq. ft. *g* F.o.b. yard, Roxbury. *h* Per roll. 65 lb. *i* Net carload lot prices; Minneapolis and vicinity. *k* Per cwt. *l* Not used. *m* 1% discount for cash. *n* F.o.b. city. *o* Per 60-lb. *p* 6-drum, 50 gal. ea. *q* Per 90-lb. roll. *r* F.o.b. factory, Chicago. *s* 466 Med. *t* Federal tax included. *u* Per 90 lb. square. *v* Per ton. *w* Price to large paint contractors is $1.25 less *x* Mineral surfaced. *y* 55-gallon container. *z* Drums. *aa* Approximate cost per 100 lbs. *bb* Roofers coating and cement; Price per ton. *cc* LCL, truck delivery. *dd* 2% cash discount. *ee* Asphalt pitch in 100 lb. package. *ff* 5-gal. drums. *gg* F.o.b. factory. *hh* Incl. freight. *D.* Std Black. *E.* Ready-mixed. *F.* Over 80% ferric oxide. * Aver. wt. approx. 425 to 550 lbs. drum. # Freight allowed to destination not exceeding .50 cwt.

SKILLED AND COMMON WAGE RATES—PER HOUR

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Heavy Const
Atlanta	$3.10	$2.50	$2.85	$2.60	$2.75	$2.00	$2.90	$1.33	$1.33
Baltimore	3.20d	2.75	3.325i	3.10/3.25	3.075i	2.975	2.975t	1.675f	1.675f
Birmingham	3.25	2.50	2.925h	2.32	2.72	3.00	3.025h	1.375	1.475
Boston	3.185e	2.75	3.275i	3.20	3.30I	3.13R	3.20d	2.14Y	2.14Y
Chicago	3.55b	3.30e	3.40b	3.15w	3.625e	3.53f	3.39e	2.50b	2.50b
Cincinnati	3.325	3.075	3.19b	2.85/3.10	3.10	3.28N	3.335V	2.12	2.02
Cleveland	3.375i	3.325#	3.325i	3.175	3.325	3.325	3.325e	2.575	2.575
Dallas	3.50	2.75	2.875	2.75	3.437	3.00	3.00	1.45	1.45
Denver	3.50	2.85	2.85	2.78	3.30	3.00	3.05	1.875	1.875
Detroit	3.45ee	3.21v X	3.33e	3.20v	3.49dl	3.52H	3.125b	2.45e	2.45e
Kansas City	3.625	2.75	2.90	2.725/2.97	3.25	3.14°	3.20b	2.03	2.03
Los Angeles	3.40	2.825m	3.175b	2.72d	3.56Sm	3.20	3.35e	2.15i	2.15i
Minneapolis	3.225	2.80	2.97	2.75	3.00	3.15n	3.00	2.05	2.05
New Orleans	3.10	2.52	2.90m	2.70	2.725	3.00b	3.00e	1.425	1.425
New York	4.15br	3.57bJ	3.975p	3.84J	4.15A	3.63asF	3.815bL	2.415J	2.415J
Philadelphia	3.92i	3.20	3.63IM	2.975/3.72e	3.625S	3.65tu	3.615e	1.95	2.25
Pittsburgh	3.625b	3.20b	3.225b	3.35b	3.375b	3.50	3.375b	2.10b	2.10b
St. Louis	3.62c	3.125A	3.10b	3.125b	3.25b	3.50c	3.39B	2.175b	2.175b
San Francisco	3.65be	2.98b	3.175A	2.835e	3.50ab	3.30 U	3.35K	2.15b	2.15b
Seattle	3.40d	2.75d	2.95d	2.78	3.25d	3.06 X	3.26F	2.35d	2.35d
Montreal*†	2.00	1.80	1.90	1.70	2.00	1.90	1.90	1.25	1.40

* Cost of living bonus now included in basic wage. # Includes 5¢/hr tool replacement. † Plus 2% vacation pay.

a 6 hr. day. b 7 hr. day. c Incl. 3% vac. stamp fund plus 7½¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF d Incl. 10¢ H&WF. e Incl. 10¢ VF. f Incl. 6% WF. g Incl. 11½¢ WF h $2.725 homes & housing plus 7½¢ WF. i Incl. 17¢ WF j Incl. 10½¢/hr. WF. k Incl. 7½¢/hr. WF. l Incl. 4% VF. m Incl. 5¢/hr WF. n Incl. 25¢ H, W, Ins., Vac. & Retirement. o Incl. 10¢ PF, 7¢ WF. p Incl. 3% WF, 3% PF. q Incl. 4% WF and 20¢ PF. r Incl. 5% W&PF, 4% VF, 1% NC, 6 PH. s Incl. 7½¢ H&WF. t Incl. 1½% PF. u Incl. 10¢ WF. v Negotiating. w Incl. 8¢ WF. x Incl. 22½¢ WF. y Incl. 7½¢ IF, 5¢ H&WF. A Incl. 15¢ WF, 15¢ PF & 20¢ B.F. B Incl. 3% WF, C Incl. 2½¢ H&WF. E Plus 6% WF, plus travel pay per day. F Plus $4/per day Annuity contrib. H Incl. 7¢ WF, 6% VF. I Incl. 15¢ H&WF. J Incl. 5% WF. 6PH. K Incl. 10¢ WF, 12½¢ VF, 7½¢ PF. L Incl. 3% WF, 3% PF, 2% VF, 1% EF. M Incl. 7½¢ PF. N Incl. 1% WF. O Incl. 2% WF, 1% PF. R Incl. 12¢ WF and 1¢ apprentice. S Incl. 12½¢ H and WF. T Incl. 21¢ H, W & VF. U Incl. 7½¢ WF, 4% VF, 1% PF. V Incl. 8½¢ WF. W Incl. 2% VF. X Incl. 6¢ VF. Y Incl. 7¢ H & WF.

MEXICO CITY PRICES

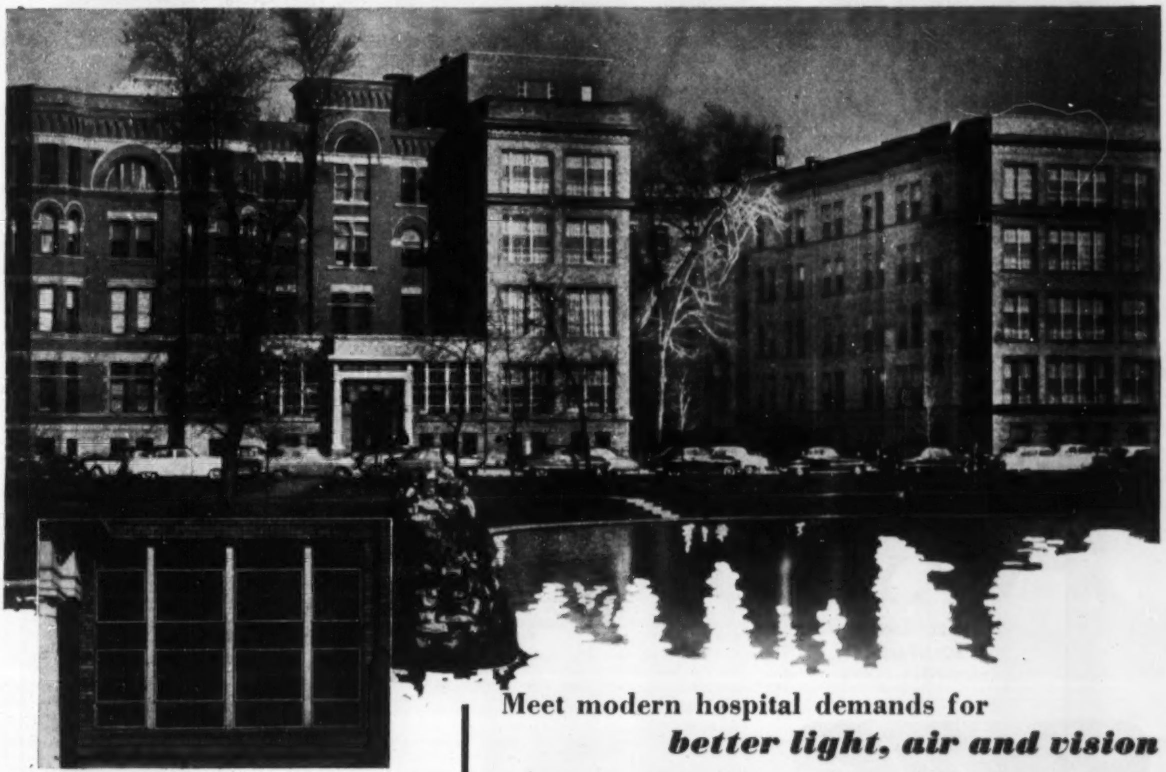
In Pesos, F.o.b. City		Oct '54	Nov '54
Common Wages—Building (8 hr. day) (Peons)	av. per hr.	1.19	1.19
Common Wages—Heavy Const. (8 hr. day) (Peons)	av. per hr.	1.19	1.19
Skilled Labor Wages			
Carpenters (8 hr. day) 1 cl.	av. per hr.	2.25	2.25
Bricklayers (8 hr. day) 1 cl.	av. per hr.	2.25	2.25
Struct. Iron Workers (8 hr. day)......Remachadores.	av. per hr.	1.37*	1.37*
Struct. Steel Shapes			
3"-15" x 12 meters	per metric ton	1428.62	1428.62
Reinf. Steel, Corr. Rods			
¼" x 11 meters	per ton	1490.00	1490.00
⅜" x 11 meters	per ton	1490.00	1490.00
½" x 11 meters	per ton	1490.00	1490.00
⅝" x 11 meters	per ton	1490.00	1490.00
¾" x 11 meters	per ton	1490.00	1490.00
1" x 11 meters	per ton	1490.00	1490.00
Gravel truck load of 3½ cu. meters			
Blue Gravel	per tr. load	69.00	73.00
Rose Gravel	per tr. load	62.00	66.00
Cement, Std. Port. (Tolteca)	per ton	160.00	160.00
Lumber			
3rd Class Pine	per M ft.	850.00	850.00
1st Class Pine	per M ft.	1500.00	1500.00
2nd Class Pine	per M ft.	1300.00	1300.00

* 1st & 2nd floors. Aver rate $4.38

ENR Skilled Average: (Bricklayers, Carpenters, Iron workers): $3.186 **ENR Common Average:** $2.022

White Cross Hospital reports multiple savings after modernizing with

BAYLEY WINDOWS



Meet modern hospital demands for *better light, air and vision*

Read these briefs from the official report:

By replacing swinging type solarium windows at end of corridors with Bayley Aluminum Projected Windows:

1. Daily coal consumption was reduced from 15 ton to 9 ton—a daily savings of $40 to $45.
2. Hallway radiators were eliminated—and still warmer than before.
3. Housekeeping was simplified by less dirt seepage.
4. Maintenance was reduced because of fewer moving window parts.
5. Hazard of patient escape through the windows was reduced.
6. Cost of periodic painting of windows was eliminated.
7. Interior and exterior appearance of building was enhanced.

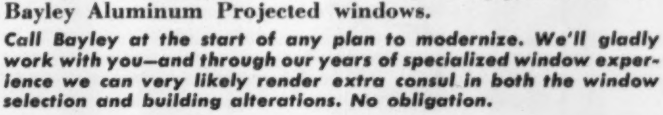
Just as others have proved! White Cross Hospital of Columbus, Ohio has found that modernizing by replacement of old style windows with modern Bayley Aluminum Projected Windows results in substantial economies. This is not to speak of improved building appearance, window operating convenience and other advantages from such features as:

Modern appearance • Economy—painting unnecessary • permanence—long care-free life • Simplicity—no complicated mechanism • Adaptable to all types of construction • Glazing outside—flat surface inside • Easily washed from inside • Prepared for screens • Permits use of accessories, such as draperies, shades, curtains, venetian blinds or awnings.

Combining all these merits with no-draft ventilation, awning-type weather protection, maximum light and vision area, it is easy to realize why there is such a growing preference for Bayley Aluminum Projected windows.

Call Bayley at the start of any plan to modernize. We'll gladly work with you—and through our years of specialized window experience we can very likely render extra consul in both the window selection and building alterations. No obligation.

75 Years of RELIABILITY



THE WILLIAM BAYLEY COMPANY

Springfield, Ohio

District Sales Offices: **Springfield Chicago New York Washington**

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MAYO ALL-STEEL HEADFRAMES

Because conditions vary so greatly from one mine or tunnel job to another, a careful analysis of your operation should be made before attempting the design or construction of a headframe. Our twenty-five years of experience on important installations in America, Europe and South America is at your disposal!

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Steel Forms • Headframes • Muck Bins
Shields • Air Locks • Locomotives
Mine Cars • Grouters

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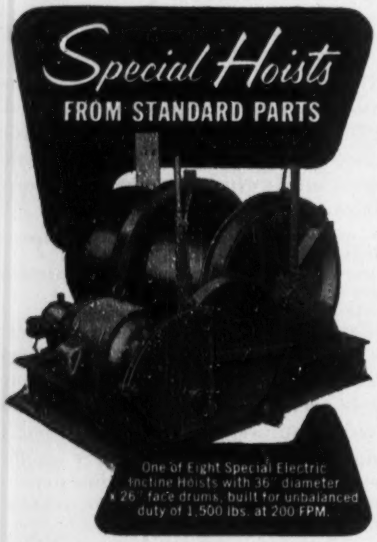
TUNNEL AND MINE
EQUIPMENT
LANCASTER, PENNA.



One of Eight Special Electric Incline Hoists with 36" diameter x 26" face drums, built for unbalanced duty of 1,500 lbs. at 200 FPM.

• By modifying and re-combining our standard parts, Superior-Lidgerwood-Mundy can engineer hoists to meet your specific requirements at the lowest possible cost.

Write for bulletins and catalogs

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MUNDY CORPORATION

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CONSTRUCTION REPORTS — First Section

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager

J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Mass., Falmouth**—HANGARS—BA 12/21—U. S. Eng., 857 Commonwealth Ave., Boston, two multi-purpose hangars, Otis Air Force Base, ENG-19-016-55-51, $800,000. Plans deposit $10 refundable, Charles T. Main, Inc., 80 Federal St., Boston, engr. CD 11/11.

▲† **Me., Limestone**—AIRFIELD PAVEMENTS—BA On Or About 3/1—U. S. Eng., 857 Commonwealth Ave., Boston 15, Mass., exten. airfield pavements, Loring Air Force Base, ENG-19-016-55-63, $2,500,000-$3,000,000. Plans deposit $15.

BIDS ASKED—BUILDINGS

Conn., Norwalk—SCHOOL—BA 12/14—City, Bd. Educ., c/o Supt. Schools, Norwalk, Honeyhill Elementary School, Midrocks Dr. $500,000. Plans deposit $50. Extended date. Cram & Young, 15 Belden Ave., archts. Walter E. Smith & W. A. Bulger, 82 Connecticut Ave., mech. engrs. CD 11/12.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Marinucci Bros. & Co., Inc., 51 Ceylon St., Dorchester, Mass. CA **$5,407,181**, est. $4,980,000. Sect. 2 hy. and bridge South East Expressway to Milton-Quincy Line, Boston, Milton and Quincy. CD 11/12, under LB.

† **A. J. Martini, Inc.**, 9 Jerome St., Medford, Mass. CA, **$637,000**, est. $800,000-$900,000. two maintenance hangars with shops, Hanscom Air Force Base, ENG-19-016-55-39, BEDFORD, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. CD 11/23, under LB.

Peter Kiewit Sons Co., 490 Pleasant St., Pawtucket, R. I. CA **$917,350**, est. $900,000. Contr. 203, Sect. 4 relief sewer, Watertown, Newton and Waltham, BOSTON, MASS. State, Metropolitan Dist. Comn., Constr. Div., 20 Somerset St., Boston, Mass. CD 11/23, under LB.

▲† **Blount Bros. Constr. Co.**, Bell Bldg., Montgomery, Ala. CA **$2,144,392**, est. $2,500,000-$3,000,000. double cantilever hangar ground storage reservoir, pump station, Otis Air Force Base, ENG-19-016-55-33, FALMOUTH, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. CD 11/9, under LB.

† **Theodore Loranger & Sons**, 404 Nash Rd., New Bedford, Mass. LB, **$584,400**, est. $500,000-$600,000. base warehouse, rocket storage, check out and assembly bldgs., engine build-up, Otis Air Force Base, ENG-19-016-55-40, FALMOUTH, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Nov. 23. CD 11/16.

BUILDINGS

LOW BIDS AND CONTRACTS

Harvey Constr. Co., Inc., 450 Valley St., Manchester, N. H. CA Approx. **$750,000.** HOSPITAL, Notre Dame Ave., MANCHESTER, N. H. Hospital Notre Dame Des Lourdes, 337 Notre Dame Ave., Manchester, N. H. Bids Nov. 22. CD 11/8.

Poley Abrams Corp., 2 Elm Place, Brookline, Mass. CA, **$938,400.** Alcott Elementary SCHOOL, Laurel St. and addns. to Thoreau Elementary SCHOOL and HIGH SCHOOL, CONCORD, MASS. Town, Stow St., Concord, Mass. CD 11/3, under LB.

▲ **Mauro Constr. Co.**, 62 Bassett St., New Haven, Conn. Owner Builds, **$1,800,000**, 181 RESIDENCES "Mauro Acres" Foote St., HAMDEN, CONN.

▲ **Johnson Constr. Co.**, 50 Legewood Rd., West Hartford, Conn. Owner Builds. **$1,200,000.** 40 RESIDENCES, Tootin' Hills Extension, WEST SIMSBURY, CONN.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

New York—GARAGE and PORTAL FINISH—BA 1/4—At office of Chief Engineer of The Port of New York Auth., 111 8th Ave., New York, Zone 11, Contr. LT-160.016, constr. emergency garage and portal finish for the Third Tube of Lincoln Tunnel, New York Plaza. Plans deposit $30. CD 1/18.

▲† **N. Y., Plattsburg**—AIR FORCE FACILITIES—BA 1/4—U. S. Eng. 80 Lafayette St., New York, Zone 13, airforce facilities (FY 1955 program), paving and grading, incl. addnl. airfield pavement as extens. to existing runways, taxiways, and apron constructed by others, incl. clearing, grubbing, grading, subgrade load tests, drainage, installing apron appurtenances, install flush type fire hydrants, water mains, paving taxiway shoulders, constr. blast pads and area seeding, at Air Force Base, Serial No. ENG-30-075-55-205. $4,000,000-$5,000,000. Plans deposit $10. CD 10/15/52.

BIDS ASKED—BUILDINGS

▲ **Pa., Elizabethtown**—HOSPITAL—BA 12/22—Masonic Homes, Elizabethtown (selected list of bidders) Memorial Hospital. $1,750,000. Lawrie & Green, 321 N. Front St., Harrisburg, archts.

SOON LETS CONTRACT—BUILDINGS

▲ **N. Y., Mt. Vernon**—HOSPITAL WING—Mt. Vernon Hospital, N. 7th Ave., soon lets contract hospital wing. $1,500,000. Ferrenz & Taylor, 152 W. 42 St., New York, Zone 36, archts. CD 4/7.

▲ **Pa., North Wales**—PLANT—Leeds & Northrup Co., 4901 Stenton Ave., Phila., soon lets contract, m[illegible] plant. $4,000,000. L. Rossetti, Marquette Bldg., Detroit, Mich., archt. Giffels & Vallet, Inc., Marquette Bldg., Detroit, Mich., engr. CD 10/13.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

NEW JERSEY State Hy. Dpt., 1035 Parkway Ave., Trenton,

Utility Constr. Co., 84 Paterson St., New Brunswick, N. J., CA, **$539,457**, grading, paving 0.699 mi. Route 18 from Albany to Bishop Sts., New Brunswick, Middlesex Co. Bids Oct. 19, awarded Nov. 24. CD 10/28, under LB.

North End Lumber Co., 1512 N. Main Ave., Scranton, Pa., LB **$124,695**, general constr.;

H. N. Gardner, 920 Green Ridge St., Scranton, Pa., LB **$81,653**, piping and equipment for replacing sewage disposal plant and corrections to collection sys. at Clarks Summit State Hospital, CLARKS SUMMIT, PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids Nov. 24. CD 10/27.

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

Princemont Constr. Corp., 1138 Fern St., Silver Spring, Md. LB **$1,298,580.** grading, drainage, wid'n., surf. 3.11 mi. State Rte. 586, Wheaton-Rockville, Contr. M 526-2-320, Montgomery Co.;

Rea Constr. Co. & C. H. Lawson, Inc., Box 2015, Charlotte, N. C. LB **$1,910,628.** grading, drainage, surf. 7.07 mi. dual hy., Annapolis-Washington Expressway, Contr. P 736-16-320, Prince George Co.;

E. D. Plummer & Sons, 961 S. Main St., Chambersburg, Pa. LB **$740,374.** grading, drainage, wid'n., reloca-

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a suuplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

†	**Federal Government**
▲	**Project of $1,000,000 or over.**
ENR	**Engineering News-Record**
CD	**Construction Daily**

For additional reports see Construction Daily.

tion, surf. 6.793 mi. State Rte. 632, Downsville-Hagerstown, Contr. W 447-620, Washington Co. Bids Nov. 18. CD 11/3.

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,

Wilmouth Paving Co., First and P Sts. S.E., Wash. 3, D. C. LB **$1,978,050**. grading, surf. 3.193 mi. New Hampshire Ave. District Line to Montgomery Co. Line, near Wash., D. C., Contr. P 736-2-320, Prince George Co.;

Taylor & Keebler, Inc., Box 121, Clinton, Va. LB **$529,220**. surf. 5.08 mi. State Rte. 5, Leonardtown, Contr. SM 300-2-250, St. Marys Co.;

M. J. Grove Lime Co., Lime Kiln, Md. LB **$454,526**. surf. 3.234 mi. State Rte. 64, Cavetown, Contr. W 448-620, Washington Co.;

project rescinded, grading, drainage, relocation, surf. 3.75 mi. State Rte. 113 near Berlin, Contr. WO 332-4-120, Worcester Co. Bids Nov. 23. CD 11/3.

▲† **Lycoming Constr. Co., Inc.**, Williamsport, Pa. LB **$2,525,404**. airfield imprvs., extens., ENG-18-020-55-19, ABERDEEN PROVING GROUND, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. Bids Nov. 24. CD 11/1.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Regis Park Homes**, c/o Edelson Realty Co., Inc., 109 W. Main St., East Islip, N. Y. Owner Builds. **$2,000,000**. 200 HOUSES, Sunrise Hy. and Brook Ave., BAY SHORE, N. Y.

▲ **Norman Raben**, c/o Bonded Realty Corp., Sunrise Hy., Lindenhurst, N. Y. Owner Builds. **$1,000,000**. 100 HOUSES, Sunrise Hy., LINDENHURST, N. Y.

▲ **George A. Fuller Co.**, 597 Madison Ave., New York, N. Y. CA Approx. **$15,000,000**. 34 story HEADQUARTERS BLDG., Park Ave., 52 and 53 Sts., NEW YORK, N. Y. Seagram Distillers Corp., 405 Lexington Ave., New York 17, N. Y. CD 7/14.

New Elk Development Corp., 303 Fourth Ave., New York 10, N. Y. Separate Contracts. **$750,000**, APARTMENT, 994-1000 First Ave., NEW YORK, N. Y. CD 3/12.

▲ **Lex.-56 Corp.**, 50 E. 42 St., New York 17, N. Y. Separate Contracts. **$1,750,000**, APARTMENT, 667-76 Lexington Ave., NEW YORK, N. Y. CD 3/19.

Midtown Estates, Inc., 50 E. 42 St., New York 17, N. Y., Separate Contracts. **$900,000**, APARTMENT, 150-58 E. 56 St., NEW YORK, N. Y. CD 3/17.

McLean Avenue Realty Corp., 825 E. 140 St., New York 54, N. Y. Separate Contracts. **$768,000**. 6 story APARTMENT, Virco Ave. and McLean Ave., NEW YORK, N. Y. CD 7/28.

Pine View Apartments, c/o Seelig & Finkelstein, archts., 153 Pierrepont St., Brooklyn 2, N. Y. Owner Builds. **$500,000**. 3 story APARTMENT for 55-families, 309 North Broadway, YONKERS, N. Y.

Hollywood Homes, c/o Edwin A. Garry, 950 Red Road, Teaneck, N. J. Owner Builds. **$600,000**. 26 HOUSES on tract on Washington Ave. and Beechwood Dr., WASHINGTON TWP., N. J.

▲ **Arrowhead Homes**, c/o Ray Bell & Assocs., 1921 Morris Ave., Unionville, N. J. Owner Builds. **$2,200,000**. 100 HOUSES on tract on Rahway Ave., WESTFIELD, N. J.

▲ **McCloskey & Co.**, 1620 W. Thompson St., Phila., Pa. CA **$3,000,000**. OFFICE BLDG. (alterations from hotel), PHILA., PA. Pennsylvania Lumberman's Mutual Insurance Co., Market St. Natl. Bank Bldg., Phila., Pa. Bids Sept. 29. CD 9/15.

The Lacchi Constr. Co., 330 N. Charles St., Baltimore 1, Md. CA **$734,700**. 1 story, masonry Perry Hall Elementary SCHOOL, Perry Hall, TOWSON, MD. Baltimore Co., Bd. Educ., Aigburth Rd., Towson, Md. CD 11/23, under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Ky., Louisville**—BA 12/17—Metropolitan Sewer Dist., 414 W. Jefferson St., Contr. 162, Upper Dry Run Trunk Sewer, Sect. C, 2,347 ft. 12x19 ft. rein.-con. inverted egg sewer, necessary manholes, $1,000,000. Plans deposit $50, Morris Forman, city engr. CD 4/22/48.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **VIRGINIA**—Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington,

Robertson-Henry Co., Box 2078, Huntington, W. Va. LB **$1,077,915**, Proj. 1F10-1G2, tunnel and bridge, etc. 12.678 mi. Blue Ridge Parkway from Rte. U. S. 60 to Otter Creek Bridge No. 2, Amherst and Rockbridge Counties. Bids Nov. 23. CD 11/1.

GEORGIA—State Hy. Dpt., Atlanta,

R. G. Foster & Co., Wadley, Ga., CA, **$531,482** wid'n., resurf 17.853 mi. Augusta to Thomson Rd. S.R. 12, McDuffie, Columbia and Richmond Counties. Awarded Nov. 12. CD 11/19, under LB.

CEMENT GUN COMPANY RESTORES 15 MILLION GALLON RESERVOIR WITH "GUNITE"

This 15 million gallon reservoir of a large Virginia municipality was made "better than new" with a 2" thick "GUNITE" lining placed by a Cement Gun Company crew. The structure had been leaking badly through construction joints and required grouting behind the slopes in order to fill voids formed by the leakage. With reinforcing mesh in place, we applied "GUNITE" to the slopes and out 8 feet on bottom. Results were so pleasing to city officials that we were asked to repair an adjacent 5 million gallon reservoir.

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Northwest Shovel repowered with D-326 "Cat" equipped with S-N Model 2255-12/3054-7.

thanks to S-N reduction gears"

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▲ **GEORGIA**—Georgia State Toll Bridge Authority, 2 Capitol Sq., Atlanta,

American Bridge Div., U. S. Steel Corp., 525 Wm. Penn Pl., Pittsburgh 30, Pa., CA, **$3,677,480**, Contrs. 2 and 3, Turtle River Bridge, Glynn Co.;

Seaboard Constr. Co., Brunswick, Ga., CA, **$530,074**, Contr. 4 for superstructure of Turtle River Bridge, Glynn Co. Bids Sept. 3, awarded Nov. 2. CD 9/10, under LB.

▲ **FLORIDA**—State Road Dpt., Tallahassee,

Marion Constr. Co., Ocala, Fla., CA, **$789,957**. limerock base wid'n. and overbuild, sects. new limerock base, bit. surf. tr. c. conc. 17.234 mi. State Road 500, Job 3607-109, Marion Co.;

M. J. Carroll Constr. Co., Box 822, Leesburg, Fla., CA, **$1,371,351**. c. conc., concrete curbs, gutter, sidewalks, storm sewers, wid'n. one 30.5 ft. concrete bridge, 12.347 mi. State Rds. 500 and 600 Job 7501-102, Orange Co. Bids Nov. 1, awarded Nov. 19. CD 11/8, under LB.

† **B. B. Saxon**, Montgomery, Ala., CA **$352,359**. rehabilitation of buildings, warehouses and shops at Auxiliary Field No. 9, ENG-01-076-55-34, EGLIN AIR FORCE BASE, FLA. U. S. Eng., P. O. Box 1169 Mobile, 7, Ala. Bids Oct. 28. CD 10/18.

KENTUCKY—Commonwealth of Ky., Dpt. Hys., Frankfort,

Nally & Gibson and Geoghegan & Mathis, Bardstown, Ky. CA **$630,000**. b. conc. Class I surf. 6.675 mi. Glasgow-Edmonton Rd., F 543 (1), SP 5-52, SP 85-84, Barren and Metcalfe Counties. CD 11/26 under LB.

TENNESSEE—State Hy. Dpt., Nashville,

Oman Constr. Co., P. O. Box 146, Nashville 2, Tenn. CA **$550,491**, crushed stone and bit. materials surf., constr. bridge over Clinch River 2.202 mi. sect. State Rte. 32, Proj. No. F-032-3-(2), Claiborne and Grainger Counties. Bids Sept. 24. CD 9/30, under LB.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Mich., Redford—SCHOOL—BA 12/15—Redford Union School Dist. No. 1, 26440 Puritan St., elementary school, Mich. 54-C-401-AA, $550,000. Plans deposit $50 refundable, Earl G. Meyer, 806 Farwell Bldg., Detroit, archt. CD 8/9.

Wis., De Pere—DORMITORY—BA 12/17—St. Norbert College, De Pere, dormitory, $600,000. Plans deposit $25. Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., Green Bay, archts. CD 4/6.

SOON LETS CONTRACT—BUILDINGS

Ill., Glenview—PLANT—Signode Steel Strapping Co., 2600 N. Western Ave., Chicago, soon lets contract first unit, steel strapping plant, sewers, water, paving, landscaping, near here. $500,000. Skidmore, Owings & Merrill, 100 W. Monroe St., Chicago, Zone 3, archts. R. W. Hazekamp, 12761 S. Wallace St., Chicago, landscaping. CD 6/30.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **George Sheaf & Co., Inc.**, 449 Neilston St., Columbus, O., CA **$1,808,774**. structural work to expand water filtration plant at Collins Park, TOLEDO, O. City. City Hall, Toledo, O. Bids Nov. 3, awarded Nov. 17. CD 11/9, under LB.

▲ **Santucci Constr. Co.**, 5035 Church St., Skokie, Ill., CA, **$1,556,800**, Howard St. Intercepting Sewer, Skokie, CHICAGO, ILL. Sanitary District of Chicago, 910 S. Michigan Ave., Chicago 5, Ill. Bids Oct. 14, awarded Nov. 22. CD 11/8, under LB.

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Lansing,

A. Lindbergh & Son, Inc., Ishpeming, Mich. CA **$1,060,138**. concrete dual 6.17 mi., F 52-40 C1-R, F 52-40, etc., Marquette Co.;

I. L. Whitehead Co., Sault Ste Marie, Mich. CA **$530,664**. stabilized aggregate surf. 5.4 mi. M-35, SS 7-16 C3-U, SS 7-16 C4-R (S 306 2), Baraga Co. CD 11/24, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Miletti Constr. Co.**, 2473 State St., Akron, O. CA **$1,008,436**, general constr.;

Zindle Plumbing & Heating Co., 1055 S. Main St., Akron, O., CA **$326,440**, plumbing and heating for South HIGH SCHOOL, Wooster Ave., AKRON, O. Bd. Educ., 70 N. Broadway, Akron, O. Bids Oct. 15, awarded Nov. 22. CD 11/1, under LB.

Shepard & Rogers Constr. Co., Silver Hills, New Albany, Ind., LB **$345,470**, 206x359 ft., L-shaped, brick over concrete block, JUNIOR HIGH SCHOOL, SCOTTSBURG, IND. Scottsburg-Vienna Township Bldg. Corp., Scottsburg, Ind. Bids Nov. 23. J. M. Rotz Eng. Co., Merchant Bank Bldg., Indianapolis, Ind., engr.

▲ **Coath & Goss**, 5103 Lake St., Chicago, Ill., CA, **$1,962,735**, police traffic OFFICES and traffic COURTS, rebuilding WHOLESALE GROCERY, 325 N. La Salle St., CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Sept. 13, awarded Nov. 22. CD 9/29, under LB.

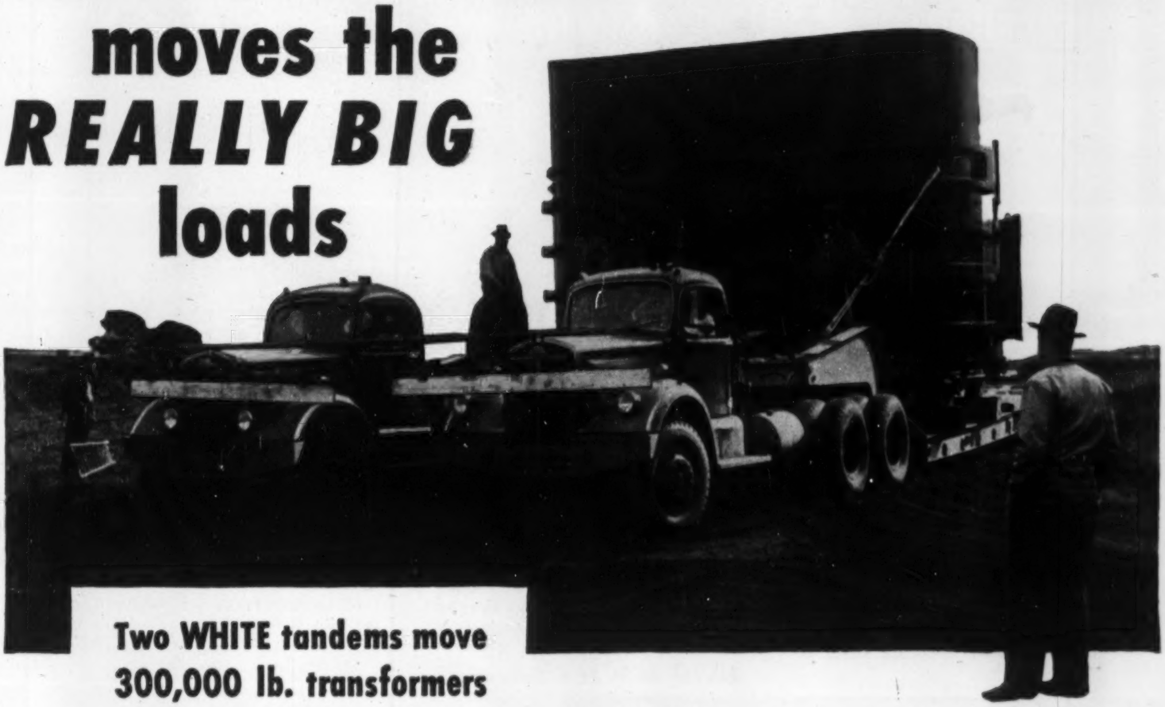
Fred Berglund & Son Co., 8410 S. South Chicago Ave., Chicago, Ill., CA, **$500,000**, SCHOOL, CHURCH and CONVENT, CHICAGO, ILL. St. Walter's Parish, 11755 S. Western Ave., Chicago, Ill. Bids Nov. 14, awarded Nov. 19. CD 11/9.

Erik Borg Co., 6649 Ridge Rd., Chicago, Ill., CA, **$590,000** HIGH SCHOOL, GYMNASIUM, 87 and Kedzie Sts., CHICAGO, ILL. Lutheran High School Assn., 77 W. Washington St., Chicago 2, Ill. Bids Nov. 4, awarded Nov. 18. CD 10/21.

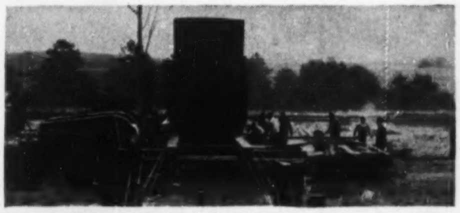
Lamp Constr. Co., 112 Division St., Elgin, Ill., CA, **$586,437.** Dundee High SCHOOL, DUNDEE, ILL.

(Continued on page 90)

How DUKE POWER COMPANY moves the *REALLY BIG* loads

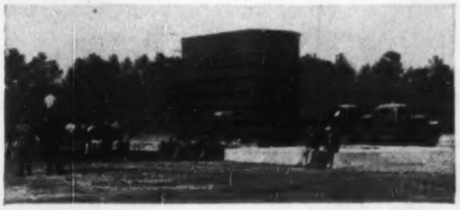


Two WHITE tandems move 300,000 lb. transformers



(A) LOADING UP this bulky load is a mean job. Here the transformer is moved onto the low-boys pulled by two husky White Model WC2864's, ready to go!

(B) ON ITS WAY, the huge transformer moves by White Mustang Power to the station ½ mile away. Plenty of Mustang Power here!



(C) MISSION COMPLETED, the rugged Whites stop at the end of the trip, turn the 300,000 lb. transformer over to the riggers.

PROBLEM: To move two 300,000 lb. transformers to a new station of the Duke Power Co., Spartanburg, S. C., not accessible by surfaced road or spur track.

SOLUTION: Two White Model WC2864 Tractors with low-boy trailers handled these big loads without delay or difficulty. Operating side-by-side, from siding to plant site, these rugged Whites had plenty of power . . . dependable all the way.

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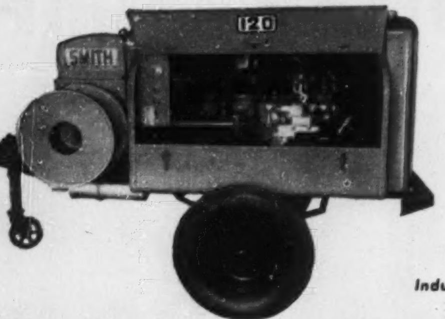

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120-P

Powered by
CHRYSLER
Industrial Engine

Smith
120-P
air compressor

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- ✓ Two 80-lb. sheeting drivers.
- ✓ One 50-lb. rock drill.
- ✓ Four backfill tampers, or two concrete vibrators.

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Also the Smith 70-P Compressor

GORDON SMITH & CO., Inc.

430 College Street
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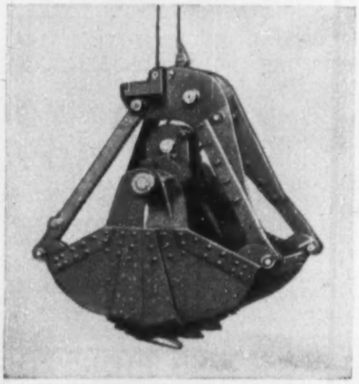

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(Continued from page 88)

School District 30, Southwestern Ave., Carpentersville, Ill. Bids Nov. 10, awarded Nov. 19. CD 11/4.

Power Constr. Co., 212 S. Marion St., Oak Park, Ill., CA, **$700,000**, Howard JUNIOR-HIGH SCHOOL addn., WILMETTE, ILL. School District 39, 738 10 Ave., Wilmette, Ill. Awarded Aug. 22. CD 7/12.

Alfred A. Smith, 721 E. Saratoga St., Ferndale, Mich. CA Est. **$500,000**. WAREHOUSE addn., alterations, Hamilton and Holden Sts., DETROIT, MICH. Pittsburgh Plate Glass Co., 6045 Hamilton St., Detroit, Mich. CD 11/17.

▲ **George W. Lathrop & Sons, Inc.**, 1510 Montcalm St., Toledo, O. CA **$2,267,208**, general contract;
Dart & Cady, Mason, Mich. CA **$686,599**. plumbing, heating and ventilating contracts;
Hatzel & Buehler, Inc., 862 Penobscot Bldg., Detroit, Mich. CA **$414,000**. electric contract for ANIMAL INDUSTRIES BLDG., Michigan State College, EAST LANSING, MICH. State, A. N. Langius, dir. State Bldg. Dpt., Lewis Cass Bldg., Lansing, Mich. Grand total $3,367,807. Bids Nov. 3. CD 10/13.

▲ **Christman Co.**, 408 Kalamazoo Bldg., Lansing, Mich. LB **$1,720,547**. 30 APARTMENT BLDGS. for married students, Michigan State College, EAST LANSING, MICH. State, A. N. Langius, dir. State Bldg. Dpt., Lewis Cass Bldg., Lansing, Mich. Bids Nov. 19. CD 10/29.

▲ **Ward W. Ross, Inc.**, Pontiac, Mich. LB **$1,175,400**. general contract;
Marion Branz Co., Ironwood, Mich. LB **$373,000**. mechanical contract for HIGH SCHOOL, EAST LANSING, MICH. City, C. E. MacDonald, supt. Schools, East Lansing, Mich. Bids Nov. 23. CD 10/21.

▲ **Biltmore Building Co.**, 17615 James Couzens Dr., Detroit 33 Mich. Owner Builds. **$3,000,000**. 300 brick single HOUSES, Deering, Cardwell and Warren Sts., INKSTER, MICH.

▲ **Angelo Real Estate Co.**, 13247 Dix Toledo Hy., Trenton, Mich. Owner Builds. **$1,100,000**. 100 brick HOMES, Grange, West Rd., Newman Dr., TRENTON, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

▲† Tex., Ellington Air Force Base — HANGAR — BA 12/23—U. S. Eng., Box 1229, Galveston, 40,584 sq. ft. A/C maint. hangar, structural steel frame; 2 story shop lean-to; same type. 14,302 sq. ft., relocation of seven existing frame bldgs., utilities, etc., Inv. No. ENG-41-243-55-25. $750,000-$1,750,000. Extended date. CD 11/15.

BIDS ASKED—BUILDINGS

▲ Mo., Warrenton—MONASTERY—BA About 2/15—Passionist Fathers, Very Rev. Neil Parsons, provincial for Western U. S., 7101 Natural Bridge Rd., Normandy, Zone 21, constr. group bldgs., incl. monastery, seminary, retreat house for laymen, 468 acre tract on Boone's Lick Rd. 1 mi. from U. S. No. 40, $2,000,000. CD 9/8/54.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Pierre Constructors** (Russ Mitchell, Inc., 5304 Old Spanish Trail, Houston, Tex., W. A. Smith Contg. Co., Inc., 1401 Fairfax Trafficway, Kansas City, Mo., and Bruce Constr. Co., Fort Worth, Tex.), LB **$4,792,636**, outlet works, Stage II, Oahe Reservoir, CIVENG-25-066-55-40, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Nov. 23. CD 10/13.

† **Tex-Davis Constr. Co. and A. E. Kroling**, Mahtomedi, Minn., LB **$606,633**, reservoir clearing, Stage I, Gavins Point Reservoir Proj., Inv. 25-066-55-15, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Nov 24. CD 11/23.

Morrison-Knudsen Co., Inc., 411 W. 5 St., Los Angeles, Calif., CA **$875,000**, laying 49.3 mi. main railway track between Sanger and Dallas, TEXAS. Atcheson, Topeka & Santa Fe Ry. Sys., T. A. Blair, Ch. Engr. (Sys.), 80 E. Jackson Blvd., Chicago 4, Ill. (parent railway for Gulf, Colorado & Santa Fe Ry. Co., Galveston, Tex.). CD 8/24.

† **A. J. Rife Constr. Co.**, 2608 Inwood Rd., Dallas, Tex. LB **$663,430**, est. $730,355, squadron headquarters and operations bldg., Abilene Air Force Base, ENG-41-443-55-37, ABILENE, TEX. U. S. Eng., 100 W. Vickery Blvd., Fort Worth, Tex. Bids Nov. 23. CD 11/12.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **E. B. L. Eckberg**, 5015 Emerson Ave. N., Minneapolis, Minn. Owner Builds. **$1,700,000**. 78 DWELLINGS between 61 and 62 Sts. from Lyndale Ave. Southwest to new Hy. 65, within city limits, MINNEAPOLIS, MINN.

C. F. Haglin & Sons Co., 123 Bryant Ave. N., Minneapolis, Minn. CA Est. **$800,000**. general contract 3 story BUILDING addn. on top of "North" Bldg. at Third St. and Fourth Ave., modernize 4 passenger elevators, MINNEAPOLIS, MINN. Minneapolis Grain Exchange, G. Wilkens, secy., Fourth Ave. S. and Fourth St., Minneapolis, Minn. E. J. Prondzinski, 110 W. 26 St., Minneapolis, Minn., archt.

▲ **Hipp's Constr. Co.**, 5912 Beard Ave. S., Minneapolis, Minn. CA est. **$2,000,000**. 180 HOMES along 57 Ave. North and adjacent streets east of Osseo Rd., MINNEAPOLIS, MINN. Pioneer Realty Co., 1910 Lowry Ave. N., Minneapolis, Minn., and Hipp's Constr. Co., 5912 Beard Ave., Minneapolis, Minn.

▲ **Ellsworth Breihan**, 8550 General Grant Lane, Affton 23, Mo. Owner Builds. **$2,000,000**. 230 addnl. RESIDENCES in General Grant Hills subdivision on

(Continued on page 92)

DELIVERING WATER CHEAPER

OMAHA, NEBRASKA
To avoid serious traffic jams while constructing its 48″ pump discharge line through busy Omaha, Metropolitan Utilities District engineers constructed a 200-foot tunnel 25 feet below ground level. The half-mile Dresser-Coupled steel line will deliver water to a new reservoir.

Busy Traffic Scarcely Knew It

OMAHA AVOIDS TIE-UPS LAYING DRESSER-COUPLED STEEL LINE THROUGH TUNNEL

Like Omaha, growing cities everywhere are thoroughly familiar with the many advantages of steel water pipe joined with Dresser Couplings.

This modern type of construction provides city engineers and contractors with a virtually "packaged pipe line"—easy to lay out and assemble, readily adaptable to job conditions, predictable as to cost.

And speaking of costs, lighter weight steel pipe reduces budget expenditures for installation. Long, strong pipe lengths call for fewer joints, speed job completion. And flexible, bottle-tight Dresser Couplings go on fast, eliminate many specials, make leakage allowance for joints unnecessary. Resilient Dresser gaskets absorb shock, vibration.

In addition to assuring low over-all installed cost, a Dresser-Coupled steel water line sustains high carrying capacity, "lives in the ground" without maintenance . . . results in *delivering water cheaper.*

✓ ***BE SURE*** **you get the best line at the best price. Always put steel pipe and Dresser Couplings in your specifications.**

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SAVE TIME·MONEY
THE DRESSER WAY
AND TROUBLE

Dresser Manufacturing Division, 319 Fisher Ave., Bradford, Pa. (One of the Dresser Industries). Warehouses: 1121 Rothwell St., Houston; 101 S. Airport Blvd., S. San Francisco. Sales Offices also in: New York, Philadelphia, Chicago, Toronto.

SOIL-CEMENT PROCESSING
of Mountain Highway
Sets Production Record

with the
Help of this
WISCONSIN
HEAVY-DUTY
Air-Cooled
ENGINE

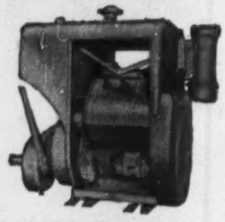
Morrison-Knudsen purchased two Seaman Trav-L-Plants, built by Seaman Motors, Inc., Milwaukee, Wis., for one-mile-a-day production of high quality soil-cement base.

Road materials pulverized, mixed, blended and correctly assembled for maximum strength and durability require accuracy in processing and precision in moisture and depth control. Cut at lower right shows Seaman method of efficient binder application and the elimination of a segregated aggregate condition by the correct assembly of coarse and fine particles.

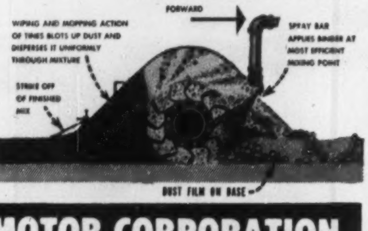
The Wisconsin engine provides a uniform flow of water or bituminous binder to the materials during mixing operation. Picture shows the Seaman in a mixing operation, preparatory to liquid application.

This is just another typical power assignment in which Wisconsin Heavy-Duty Air-Cooled Engines play important roles. Construction contractors, equipment designers and builders . . . men who are most familiar with power equipment service demands . . . specify "WISCONSIN ENGINES" as their best guarantee of dependable service and low-cost maintenance.

You can't do better than to specify "WISCONSIN" for *your* equipment. Write for Bulletin S-164.



Model VG4D Wisconsin Heavy-Duty Air-Cooled Engine specified as standard equipment on Seaman Trav-L-Plant. Equipped with Stellite exhaust valves and valve seat inserts and valve rotators for long engine life and minimum servicing.



WIPING AND MOPPING ACTION OF TINES BLOTS UP DUST AND DISPERSES IT UNIFORMLY THROUGH MIXTURE
FORWARD
SPRAY BAR APPLIES BINDER AT MOST EFFICIENT MIXING POINT
STRIKE OFF OF FINISHED MIX
DUST FILM ON BASE

MOST H.P. HOURS
WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

A 8116-½-I

Chain Sets
for Dragline Buckets

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Revolving Cranes
10 to 200 tons Capacity
Barge Mounted or on land
Stiff Leg and Guy Derricks
THE HAVRE DE GRACE SHIPYARD, INC.
Havre de Grace, Md.

(Continued from page 90)

U. S. No. 66 west of Laclede Station Rd., AFFTON (ST. LOUIS 23 P.O.), MO. CD 12/4/47.

▲ **John Epple Constr. Co.**, 1417 Hickory St., Columbia, Mo. CA **$1,742,000.** general contract;

C. Wallace Plumbing Co., 2224 Summer St., Dallas, Tex. CA **$912,531.** plumbing and heating for 5 story MEDICAL SCIENCE BLDG., COLUMBIA, MO. Curators of Missouri University, c/o Leslie Cowan, secy., Jesse Hall, Columbia, Mo. Bids Nov. 18, awarded Nov. 20. CD 11/24, under LB.

▲ **Chalmers & Borton Constr. Co.**, Box 1031, Hutchinson, Kan., CA Approx. **$4,000,000.** 6-million bu. GRAIN ELEVATOR, LINCOLN, NEB. C-G Grain Co., National Bank of Topeka, Bldg., Topeka, Kan. CD 9/13.

▲ **Thad Dederick Constr. Co.**, Box 13067, River Oaks Station, Houston, Tex., LB **$1,148,404**, 4 story, 60,000 sq. ft. HOTEL, 110 rooms, ORANGE, TEX. Orange Community Hotel Co., Orange, Tex. Holabird & Root & Burgee, 180 N. Wabash St., Chicago, Ill., consult. archts. Bids Nov. 17. CD 10/12.

▲ **Olsen Co.**, Scanlan Bldg., Houston, Tex., CA **$1,125,000**, recycling PLANT; CA **$90,000**, loading and unloading facilities for recycling plant; CA **$85,500**, PRODUCTS STORAGE UNIT; CA **$85,000**, some crude oil lines, 6 mi. southeast of SILSBEE, TEX. Grand total $1,385,500, American Republics Corp. and Houston Oil Co. of Texas, Petroleum Bldg., Houston, Tex. CD 9/23.

FAR WEST

BIDS ASKED—BUILDINGS

▲ **Wash., Seattle**—SCHOOL—BA 12/21—Highline School District, 401,253 S. 152 St., 5 rein.-con. buildings totaling 106,000 sq. ft. for Lakewood Junior-Senior High School, 10 Ave. S. W. and S. W. 116 St. with low-pressure steam heating $1,000,000. Plans deposit $50. for general; $25 each for mechanical and electrical. Steinhart, Stanley & Theriault, Medical Arts Bldg., archts. CD 4/29.

Calif., San Jose—SCHOOL—BA 12/22—San Jose City Unified School District, 408 Almaden Ave., Markham Junior High School and Willow Glen Senior High School. $750,000. Kress, Goudie & Kress, 363 Park Ave., archts. CD 2/15.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Morrison-Knudsen Co., Inc.**, 411 W. 5 St., Los Angeles, Calif., CA, **$634,476**, est. $643,894. earthwork, concrete lateral lining, structures for Unit 4, Mohawk Distribution Sys., Gila Proj. Spec. DC 4273, ARIZONA. Bureau Reclamation, Dpt. Interior, Yuma, Ariz. Bids Nov. 18. CD 10/12.

† **Morrison-Knudsen Co., Inc.**, 411 W. 5 St., Los Angeles, Calif., CA, **$816,744**, est. $681,329, earthwork, concrete lateral lining, structures for Unit 2, Domean Wellton-Mohawk distribution sys., Gila Proj. Spec. DC 4258, ARIZONA. Bureau Reclamation, Dpt. Interior, Yuma, Ariz. Bids Nov. 3, awarded Nov. 18. CD 11/10, under LB.

▲ **WASHINGTON**—State Hy. Comn., Olympia,

Roy T. Earley Co., 321 Middle Waterway, Tacoma, Wash., CA, **$1,008,944**, rein.-con. T-beam bridge and timber pile trestle on 0.315 mi. Secondary State Hy.-1-K, approach to First Ave. S. Bridge in Seattle, Sch. D, F.A.P. U-001-3 (8), King Co. Bids Nov. 16, awarded Nov. 17. CD 11/19, under LB.

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento,

C. K. Moseman, 727 Barron Ave., Redwood City, Calif., LB **$370,218**, grading, surf. and 3 rein.-con. bridges 5.5 mi. Mt. Whitney Ave., Fresno Co.;

A. G. Raisch Co., Box 458, San Rafael, Calif., LB **$1,192,962**, surf. 3.7 mi. also line tunnels, lighting etc., Marin Co.;

Granite Constr. Co., Box 900, Watsonville, Calif., LB **$1,512,027**, grading, paving, 6 rein.-con. bridges 5.1 mi. Sacramento Co. Bids Nov. 17. CD 10/26.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,

Winston Brothers Co., 1532 S. California Ave., Monrovia, Calif., CA **$2,812,322** grading 4.2 mi., 7 bridges on Ramona Freeway, West Covina, Los Angeles Co. Bids Oct. 21, awarded Nov. 16. CD 11/4, under LB.

† **Clarence Ward Constr. Co.**, 4623 E. Harvey Ave., Fresno, Calif., CA, **$519,059**, 4 single story concrete, masonry UNIT BLDGS., for shops, utilities, parking areas, etc., ENG-04-203-55-24, CASTLE AIR FORCE BASE, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Nov. 18, awarded Nov. 22. CD 11/4.

▲ **Pittsburgh-Des Moines Steel Co.**, Box 329, Santa Clara, Calif., CA, **$2,000,000**, wind tunnel, TORRANCE, CALIF. North American Aviation, Inc., 5800 Avion Dr., Torrance, Calif.

BUILDINGS

LOW BIDS AND CONTRACTS

Bell & Valdez, 1044 116 St. N. E., Bellevue, Wash., Day Labor, **$817,500**, 66 HOUSES, S. E. 40 and 146 Ave. S. E., BELLEVUE, WASH.

Brazier Constr. Co., 309 Pontius St., Seattle, Wash., LB, **$613,000** general contract 1 story, 79,045 sq. ft. rein.-con., steel HIGH SCHOOL, East Bremerton, BREMERTON, WASH. School District No. 100C, 16 and Chester Sts., Bremerton, Wash. Bids Nov. 23. CD 10/28.

Wall., Bartram & Sanford, Junction City, Ore., LB, **$736,047**, 7 rein.-con. HIGH SCHOOL BLDGS., ELLENSBURG, WASH. School District No. 401, Ellensburg, Wash. Bids Nov. 23. CD 11/10.

CANADA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Pressure Pipe Co. of Canada Ltd.**, 6905 Clanranald Ave., Montreal, Que., CA, **$1,428,089,** concrete pressure pipe for water sys., MONTREAL, QUE. Municipality, City Hall, Montreal, Que. CD 9/13/44.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Rush & Tompkins Ltd.**, 10023 103 St., Edmonton, Alta., CA, **$2,339,500,** CITY HALL, south of Canadian National Rys. Station, EDMONTON, ALTA. City, Civic Block, Edmonton, Alta. Bids Nov. 17, awarded Nov. 22. CD 11/24, under LB.

▲ **Edson Development Corp.**, Edson, Alta., Owner Builds, **$5,500,000** HOUSING program, incl. 500 houses, EDSON, ALTA. CD 11/26.

Bird Construction Co., Ltd., 2402 2 A St. S.E., Calgary, Alta., CA, **$729,950,** NURSES RESIDENCE for Galt Hospital, 9 and 10 Aves., and 17 and 19 Sts., LETHBRIDGE, ALTA. Lethbridge Municipal Hospital Bd., c/o John MacKay, City Hall, Lethbridge, Alta. Bids Nov. 20, awarded Nov. 22. CD 11/12.

Gray-Shaw Construction Co., Ltd., 1747 Eglinton Ave. W., Toronto, Ont. Owner Builds, **$675,000.** 67-suite APARTMENT, Broadway Ave., TORONTO, ONT. Grossman & Lilitzak, 233 Spadina Ave., Toronto, Ont., archts. CD 9/9.

Silverton Construction Co. Ltd., 257 Yonge Blvd. Toronto, Ont., CA Est. **$832,000,** 102-suite APARTMENT, 206 St. George St., TORONTO, ONT. Owner, c/o L. E. Weinstein, 120 King St. E., Toronto, Ont. Awarded Nov. 23. CD 10/28.

Benjamin Bobidas, 164 Du Moulin St., Drummondville, Que., CA, Total est. **$800,000.** foundations for PLANT addn., Sylvan Road, DRUMMONDVILLE, QUE. Sylvania Electric (Canada) Ltd., 1 Sylvania Rd., Drummondville, Que. CD 3/9.

▲ **J. P. Morin Ltd.**, 528 Notre Dame St., Cap de la Madeleine, Que., CA, **$1,350,000,** 100-bed HOSPITAL, Macamic Rd., LA SARRE, QUE. Province of Quebec, Dpt. Health, Quebec City, Que. CD 2/25.

Monkland Constr. Ltd., 5470 Notre Dame de Grace Ave., Montreal, Que. Owner Builds. **$900,000,** sixty 41x29 ft., concrete, brick DWELLINGS, MONTREAL, QUE.

J. L. E. Price & Co. Ltd., 4664 St. Catherines St. W., Montreal, Que., CA, **$800,000,** superstructure of TOOLING BLDG. No. 119 at Plant, MONTREAL, QUE. Canadair Ltd., Montee St. Lawrence, Montreal, Que. CD 11/24, under LB.

Proposed Projects

WATER SUPPLY

▲ **Ky., Covington**—City, City Hall, imprv. water distr. sys. **$2,782,000,** Black & Veatch, 4706 Broadway, Kansas City 2, Mo., consult. engrs.

▲ **Tex., Fort Worth**—City, W. O. Jones, mgr., City Hall, water plant. **$5,000,000.** Freese & Nichols, 407 Danciger Bldg., consult. engrs. CD 2/4/49.

SEWERS, WASTE DISPOSAL

▲ **Ky., Owensboro**—City, sewage treatment plant, interceptor sewers (primary settling tanks, digesters, filter beds, concrete sewers), **$1,700,000,** Consoer-Townsend & Assoc., 351 E. Ohio St., Chicago, Ill., engrs.-archts. CD 4/15/46.

STREETS AND ROADS

▲ **ILLINOIS**—Illinois State Toll Highway Comn., Springfield, has received approval for 1st stage, 191 miles of turnpikes on three routes to cost **$390,000,000.** CD 6/4.

▲ **TEXAS**—Texas Turnpike Auth., c/o Clarence B. Kloppe, 6854 Lakeshore St., Dallas, and Armistead Rust Chn. of Authority, San Angelo.

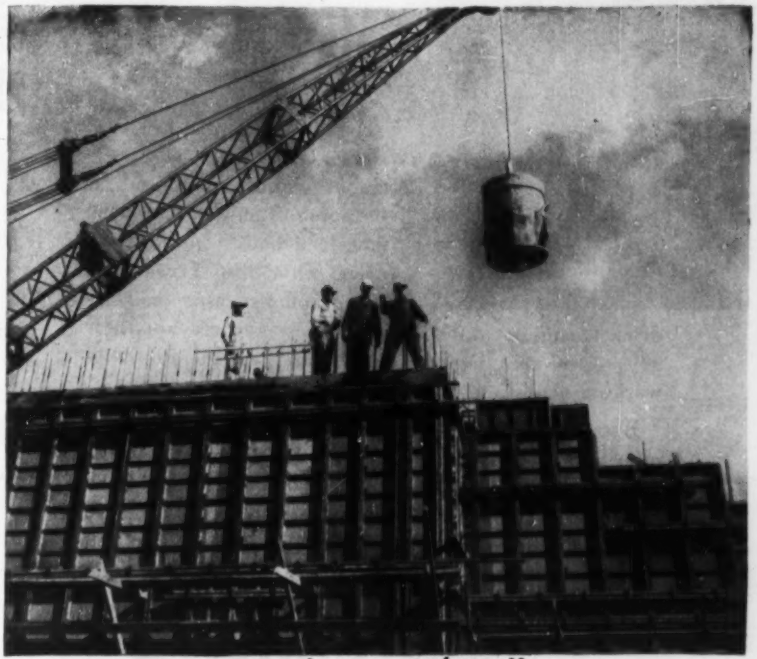
Dallas and Tarrant Counties—approx. 29¼ mi. Dallas-Fort Worth Toll Road. **$52,000,000.** J. C. Dingwall, ch. engr. Coverdale & Colpitts, 120 Wall St., New York, N. Y. will make feasibility surveys. Howard, Needles, Tammen & Bergendoff, 55 Liberty St., New York, N. Y., consult. engrs. CD 6/8.

AIRPORTS

▲† **Me., Bangor**—AIRCRAFT PAVEMENTS, etc.—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., aircraft pavements, lighting and utilities, Dow Air Force Base. **$3,000,000.** Seelye, Stevenson, Value & Knecht, 101 Park Ave., New York, N. Y., consult. engrs.

▲ **Minn., Minneapolis** — AIRPORT IMPRVS. — Minneapolis-St. Paul Metropolitan Airports Comn., R. Aldrich, exec. dir., 2429 University Ave., St. Paul, reconstr. central section of Northeast-Southwest runway at Wold-Chamberlain Field, **$650,000;** basic site preparation for proposed new terminal bldg. area near southeast corner of field, **$1,500,000,** Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, consult. engrs. CD 3/24/48.

▲ **Ont., Ottawa**—PASSENGER TERMINAL—Dpt. Transport, Ottawa, 3 story passenger terminal bldg. at airport. **$2,000,000.**



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3 Walers on 16′ Wall

Henry Carlson Const. Co., Sioux Falls, S. D., used only 3 walers with Symons Forms on 16′ high 12″ thick wall for City Water Treatment Plant. 10,000 square feet of Symons Panels were reused 12 times on the job, resulting in savings of labor, material and fast forming.

To pour these high walls certain upper panels were raised 1 foot to permit pouring through side openings for the first 8 feet of concrete.

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Bars are square edged and uniformly spaced for extra wear and long life. A heavy flanged nosing-bar provides extra reinforcement and plainly marks the edge of each step for safety's sake. Furnished in standard sizes or in special widths and lengths, they're shipped ready to bolt direct to stair stringers. For more information write Hendrick direct.

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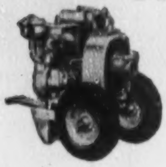
4000 gpm . . . at only 1500 rpm



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PUBLIC BUILDINGS

▲ **Calif., Watsonville**—SCHOOL—Watsonville Elementary School Dist. and Watsonville High School District, Watsonville, voted **$600,000** bonds for Watsonville Elementary School and **$1,050,000** bonds for Watsonville High School District school addns. (**Correction—status.**) CD 11/8.

▲ **Conn., Greenwich**—SCHOOL—Town, S. Willard Price, supt. Schools, Greenwich, plans by J. Gordon Carr, 80 W. 40 St., New York, N. Y., Western Junior High School, Byram, **$2,000,000.** CD 8/12.

▲ **Conn., Hartford**—MEDICAL SCHOOL—State, c/o Gov. John Lodge, State Capitol, Hartford, regional medical school. Over **$1,000,000.**

▲ **Ia., Ames**—LINDEN HALL—State Bd. Educ., State Office Bldg., Des Moines, plans by Dougher, Rich & Woodburn, 302 Garver Bldg., Des Moines, Linden Hall at Iowa State College, **$1,600,000.**

▲ **Kan., Lawrence**—HOSPITAL—City plans by Cooper, Robison & Carlson, Commerce Trust Bldg., Kansas City, Mo., Lawrence Memorial Hospital addn. **$1,000,000.** CD 10/26.

▲ **Mass., Cambridge**—COURT—Comrs. Middlesex Co., Court House, superior court bldg. **$1,500,000.**

▲ **Mich., Big Rapids**—SCIENCE—State, Ferris Institute, Victor Spathelf, pres., Big Rapids, pharmacy and allied science bldg., Ferris Institute. **$1,000,000.**

▲ **Mich., Detroit**—ARMORY—U. S. Eng., 1900 Cadillac Tower, national guard armory, Eight Mile and Mound Rds., **$1,500,000.**

▲ **N. Y., Brooklyn**—SCHOOLS—Bd. Educ., Bureau Constr., 45-12 Crescent St., Long Island City.
Proj. E-72, Junior High School 73 addn. **$1,900,000.**
Proj. E-134, Junior High School 85 addn. **$950,000.**
Proj. E-286, Junior High School 149 addn. **$675,000.**
Proj. E-320, P. S. 9. **$2,000,000.**
Proj. E[illegible]50, Junior High School 128 addn. **$475,000.**
Proj. E-489, Junior High School 64 addn. **$500,000.**
Proj. E-629, Junior High School 38, **$3,000,000.** CD 9/8/48.

▲ **N. Y., Brooklyn**—LAUNDRY—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, plans by Syska & Hennessy, 144 E. 39 St., New York, Proj. HO-144. laundry bldg. **$4,000,000.** CD 1/7/46.

▲ **N. Y., New York**—SCHOOLS—Bd. Educ., Bureau Constr., 45-12 Crescent St., Long Island City, Zone 1,
Proj. E-86, Junior High School 44 addn. **$700,000.**
Proj. E-120, P. S. 78 addn. **$400,000.**
Proj. E-183, P. S. 116 addn. **$400,000.**
Proj. E-194, Yorkville Vocational High School addn. **$1,400,000.**
Proj. E-213, P. S. 135, **$1,600,000.**
Proj. E-238, P. S. 15, **$580,000.**
Proj. E-239, P. S. 17, **$1,000,000.**
Proj. E-341, P. S. 57 addn. **$1,000,000.**
Proj. E-403, Junior High School 115 addn. **$475,000.**
Proj. E-598, P. S. 34 addn. **$700,000.**
Proj. E-649, Machine & Metal Trades High School addn. **$500,000.** CD 9/8/48.

▲ **Okla., Tulsa**—AUDITORIUM—City, City Hall, defeated **$5,500,000** bonds Nov. 16, for civic auditorium. CD 8/17.

▲ **Pa., Doylestown**—HIGH SCHOOL—Central Bucks Joint School Bd., Doylestown, Junior High School. **$1,000,000.**

▲ **Tex., Austin**—AUDITORIUM—City, City Hall, plans by Jessen, Jessen, Millhouse & Greeven, 2816 Hemphill Park, and Page, Southerland & Page, 602 West Ave., municipal auditorium, **$1,750,000.** CD 2/10.

▲ **Tex., El Paso**—HIGH SCHOOL—El Paso Independent School Dist., El Paso, plans by Davis & Foster, Mills Bldg.; 1 and 2 story masonry Cielo Vista High School addn. **$1,500,000.** CD 11/10.

▲ **Tex., Houston**—SCHOOLS—Houston Independent School District, 1300 Capitol St., plans by Donald Barthelme & Assocs., 3106 Brazos St., West Bellaire Junior High School, **$950,000;** plans by Cowell & Neuhaus, 2303 LaBranch St., Victoria-Arlington Elementary School **$1,000,000,** Milton McGinty, 2425 Ralph St., coord. archt.; plans by Colley & Tamminga, 3416-A Louisiana St., Oak Forest Junior High School, **$875,000;** plans by Emory S. White, 666 M&S Bldg., Junior High School in Sunnyside-Grimes Area, **$750,000;** plans by Wyatt C. Hedrick, 5201 Fannin St., Senior High School in Garden Villas-Foster Place area, **$1,200,000;** plans by Ralph M. Buffington, 301 Avondale St., Finnegan Park Elementary School **$650,000,** Milton McGinty, 2425 Ralph St., coord. archt.; plans by Hiram Salisbury & T. G. McHale, 3501 Buffalo Dr., Houston, SW Bellaire Elementary School **$750,000,** Milton McGinty, 2425 Ralph St., coord. archt.; plans by Wyle W. Vale, 517 W. Gray St., Clark and Cooper Road Elementary School **$500,000,** Milton McGinty, 2425 Ralph St., coord. archt. CD 6/23/47.

▲ **Wis., Beaver Dam**—HIGH SCHOOL—Bd. of Educ., Beaver Dam, plans by R. N. Levee & Assocs., 121 N. Story St., Appleton, high school. **$1,000,000.**

▲ **Man., Falcon Lake**—RESORT TOWN—Dept. Mines & Resources, Winnipeg, resort town, trailer camp, motel, shopping center, restaurants, etc. **$1,000,000.**

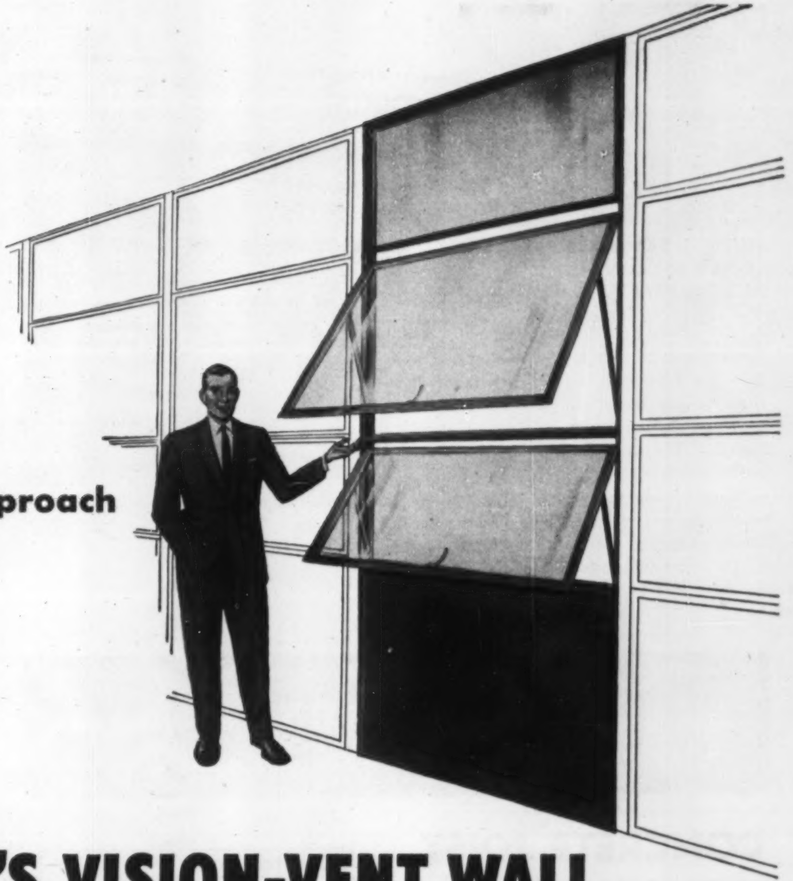
COMMERCIAL BUILDINGS

▲ **Del., Newark**—COUNTRY CLUB HOUSE—E. I. du Pont de Nemours & Co., Inc., du Pont Bldg., Wilmington, country club house, **$1,000,000.** H. M. Gordon, c/o owner, engr.

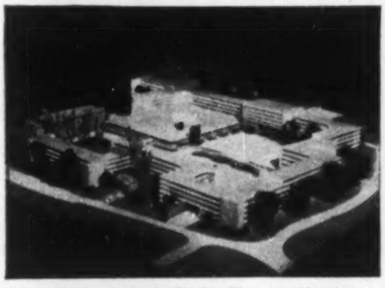
▲ **Ind., North Manchester**—RESIDENCE HALL, etc.—Bd. Trustees Manchester College, Dr. V. F. Schwalm,

(Continued on page 96)

An exciting new approach to fast, economical construction...



TRUSCON'S VISION-VENT WALL



Illustrated is a recent Vision-Vent application at Clemson Barracks, Clemson College, S. C. Lyles, Bissett, Carlisle & Wolff, architects; Daniel Construction Co., contractors. Vision-Vent also is being used for a chain of hospitals.

Vision-Vent is a new building unit with all the mass-production and installation economies of standard steel windows. It is designed to enclose entire walls.

Each Vision-Vent unit is complete. Section includes fixed lights, awning-type ventilators, and insulated steel panels. Elements may be varied to meet functional and appearance requirements.

Insulated panels—in colored porcelain enamel or in stainless steel—have a "U" factor of .197, equivalent to that of an ordinary masonry spandrel wall. Vision-Vent panels retain interior heat. They provide for efficient air-conditioning. Minimum wall thickness—less than 1½"—provides extra square feet of floor space. Light weight is reflected in structural savings.

Erection is done from inside at an average rate of a floor a day. Vision-Vent is weathertight.

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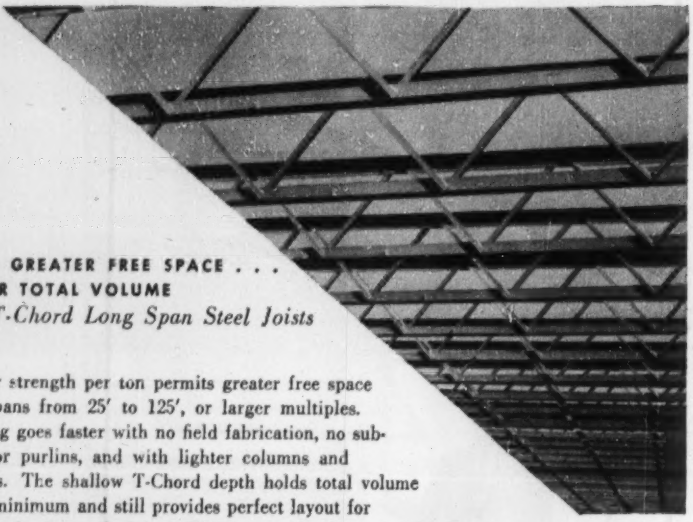

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(Continued from page 94)

pres., North Manchester, women's residence hall, science bldg., rehabilitation existing bldgs. on campus. $1,500,000.

▲ **Mich., Flint**—MOTEL—Jack J. Sarvis Champion Auto Supply Co., Flint, 2 story, 55,000 sq. ft. motel, 108 units, parking lot 40,000 sq. ft., Dort Hy. and Lippincott St. **$1,100,000.**

▲ **Mich., Kalamazoo**—DORMITORY—Bronson Hospital, Dr. William O. Perdew, supt., Kalamazoo, plans by Stapert-Pratt-Bulthuis & Sprau, 474 Academy St., steel, concrete nurses' dormitory, **$1,000,000.** CD 9/9.

▲ **Mich., Kalamazoo**—DEPARTMENT STORE—Sears Roebuck & Co., Kalamazoo, department store, 7 acre tract, **$1,250,000.**

▲ **Minn., Minneapolis**—HOTEL—Park-Plaza, Inc., F. A. Ossana, Jr., pres., County Road 60, Hopkins, plans by Thorshov & Cerny, 400 Metropolitan Bldg., remodel Plaza Hotel, incl. remodeling existing bldg., 5 story addn., 10 story bldg. on south end of block, Hennepin Ave. and Kenwood Parkway, **$6,000,000.**

▲ **Tex., Houston**—HOMES—A. & E. Developers, Inc., 3929 Villanova St., 22 brick homes, concrete slab **$316,800**; 31 frame, brick dwellings, **$363,185**; 27 brick, stone trim dwellings, concrete slab, **$347,000** area Schaeper Road intersection, near here.

▲ **N. Y., Briarcliff and Ossining**—APARTMENT—United Nations International Community Coop., Ernest Weissman, chn., c/o Keyes, Smith, Satterlee & Lethbridge, archts., 3 duPont Circle, N.W., Wash., D. C., garden apartment proj. and 100 one family houses on 120 acre tract to be called High Meadow. **$7,000,000.** Ralph Eberlin, 123 E. 77 St., New York, Zone 21, consult. engr.

▲ **O., Cincinnati**—HOUSING—Gwilym E. Jones, Vernon Manor Bldg., housing development of 57 acre tract bounded by U. S. 52 and Four Mile Rd., **$2,500,000.**

▲ **Pa., Broomall** — SHOPPING CENTER — Owner, c/o W. J. McCarter, Liberty Title & Trust Co., Broad and Arch Sts., Phila., plans by George W. Neff, 1520 Locust St., Phila., shopping center, Springfield and Lawrence Rds. **$10,000,000.**

▲ **Tex., Dallas**—DISPLAY—Walter W. Ahlschlager, 2505 Turtle Creek Dr., 7 story bsmnt., 165,000 sq. ft. wholesale furniture display bldg., 1st two floors for auto parking. Fairmount and Turtle Creek. **$1,750,000.**

▲ **Tex., Fort Worth**—RESIDENCES, etc.—E. E. Cloer, 200 Burnett St., approx. 3,000 brick veneer residences, shopping center. **$1,000,000.**

▲ **Tex., Houston**—HIGH SCHOOL—The St. Pius X High School, 6501 Almeda Rd., masonry co-educational high school, N. Shepherd Dr. **$1,100,000.**

▲ **Tex., Houston**—APARTMENT—Kielman A. Schuddekoph, c/o Town & Country Apartments, Inc., 2904 S. MacGregor St., plans by Kane & Fairchild, 734 Asylum Ave., Hartford, Conn., apartment. **$1,000,000.** CD 11/22.

▲ **Tex., San Antonio**—SHOPPING CENTERS—Barshop & Clapp Co., 1500 S. Zarzamora St., Sec. 1, shopping center, **$1,100,000**; Sec. 2, regional shopping center, **$750,000**; Sec. 3, regional shopping center, **$875,000**, on 75-acre tract area San Pedro Ave. and Loop 13.

▲ **Wis., Greendale**—RESIDENCES—Wisconsin Realty Co., 785 North Jefferson St., Milwaukee, plans by R. E. Rasche, 783 N. Jefferson St., Milwaukee, 325 residences. **$1,000,000.**

▲ **Man., Winnipeg**—MERCHANDISE MART—Manitoba Merchandising Mart, c/o John W. Harris Associates Inc., 30 Rockefeller Plaza, New York, N. Y., U.S.A. plans by Northwood, Chivers, & Casey, Nanton Bldg., 10 story, bsmnt., merchandising mart Ellice and Notre Dame Aves. **$4,000,000.**

INDUSTRIAL BUILDINGS

▲ **Ala., Huntsville**—INDUSTRIAL—The Norton Co., 1 New Bond St., Worcester, Mass., industrial bldg., 99-acre site on Tennessee River near Hobbs Island. **$1,250,000.**

▲ **Conn., Fairfield**—FOUNDRY—J. W. Bullard Mfg. Co., 1342 Kings Hy. Cutoff, Fairfield, plans by Alexander D. Crosett & Assocs., 27 William St., New York, N. Y. casting foundry adjoining present factory and west of Black Rock Turnpike, **$6,000,000.** CD 7/1.

▲ **Kan., Bonner Springs**—PLANT—Lone Star Cement Corp., Federal Reserve Bank Bldg., Kansas City, Mo., plant expansion, new kiln, auxiliary equip., raw ball mill, coal mill, clinker grinding mill, raw material feed bins, tanks, power distr. equip. **$3,500,000.**

▲ **La., Sterlington**—PLANT—Commercial Solvents Corp., Sterlington, separation and purification section of nitroparaffin plant, **$2,750,000**, Tears Engineers, 4617 Colt Ave., Dallas, Tex., consult. engrs.

▲ **N. S., New Glasgow**—FOUNDRY—I. Matheson & Co. Ltd., North Provost, New Glasgow, reconstr. foundry **$2,000,000.**

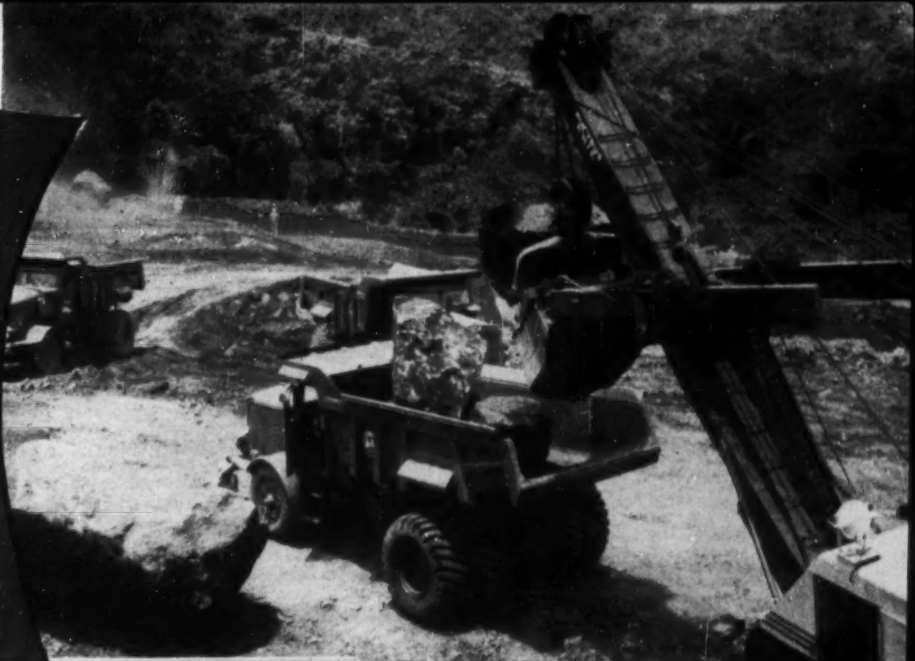
▲ **Que., Montreal**—Plant Cott Beverage of Canada Ltd., 4060 St. Lawrence Blvd., soft-drink and syrups mfg. plant. **$1,080,000.**

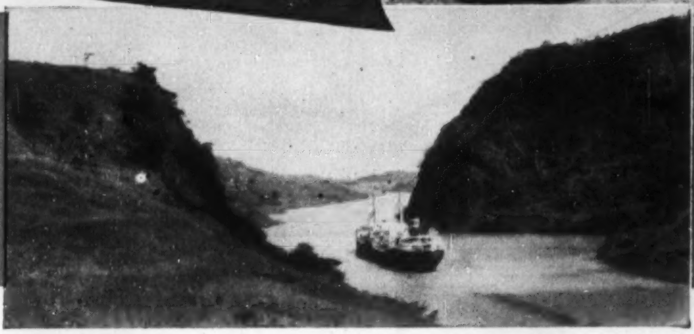
UNCLASSIFIED

▲ **Louisiana**—AERIAL TRAMWAY—The California Co., Calif. Co. Bldg., New Orleans, aerial tramway to transport personnel to and from production plant, Leeville, **$1,500,000**; stringing some field crude lines in Bay Marchand area, Leeville, **$90,000.**

▲ **N. Y., Westbury**—RACING TRACT—Roosevelt Raceway, Westbury, rehabilitation harness racing tract to include triple deck stands, new track, parking, etc. 42-acre tract. **$8,000,000.**

FACE LIFTING Contractor's Hill IN PANAMA





Huge rocks are blasted from benches for hauling to the spoil area in 22-ton "Eucs" that are working 20 hours a day to meet the 15 month contract deadline.

Gaillard Cut is the narrowest section of the Canal—Contractor's Hill, at left in this photo, threatens to slide into the channel. It is being benched to shift center of gravity away from the Canal.

Tecon Corp. picked "Eucs" for this big rock job

When Tecon Corp. was awarded the contract for this 2 million yard face-lifting project, they knew they had an urgent and mighty important job ahead of them. If new fissures in Contractor's Hill caused a slide into the narrow channel at Gaillard Cut, the Panama Canal could be closed to shipping for many months.

To meet the 15 month contract deadline, 8500 yds. of solid rock must be moved every day to a spoil area a mile away. Because of their experience with Euclid equipment on other tough jobs, Tecon chose Rear-Dump "Eucs" of 22 ton capacity. A fleet of nine machines with 300 h.p. engines and Torqmatic Drives were rushed to the site and are working 20 hours a day.

On big jobs like this one, as well as on more routine construction and mining operations, the dependable performance of "Eucs" gets more work done at lower cost per ton or yard. Your nearby Euclid dealer will be glad to provide facts and figures on the complete line of Euclid earth moving equipment.

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
STREETS AND ROADS
December 14 Massachusetts

▲† **N. H., Portsmouth**—HANGARS—BA On Or Abou 1/7—U. S. Eng., 857 Commonwealth Ave., Boston 15 Mass., nine multi-purpose hangars, Portsmouth Ai Force Base, ENG-19-016-55-62. $3,000,000-$3,500,000. Plans deposit $25. CD 12/6/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Charles Capone Contg. Co., Inc., 850A Providence Hy., Dedham, Mass. LB **$1,641,198,** est. $2,300,000. U-299 (8) hy. and bridge constr. Southern Circumferential Hy. Rte. 128, Dedham and Westwood. Bids Nov. 30. CD 11/3.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **John W. Rouse Constr. Corp.,** 8 Church St., Gouverneur, N. Y., LB **$1,299,627.** Junior HIGH SCHOOL, SPRINGFIELD, VT. Town School Bldg. Comn., Supt. Schools, Park St., Springfield, Vt. Bids Nov. 26. CD 11/19.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
BRIDGES
December 14 New Jersey December 21 Pennsylvania
STREETS AND ROADS
December 21 Pennsylvania December 23 New York

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **NEW JERSEY**—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,
American Bridge Div., U. S. Steel Corp., 525 Wm. Penn Pl., Pittsburgh, Pa., CA, **$1,513,375** steel superstructures of 5 bridges in Jersey City, Contract N-16, Hudson Co. Bids Nov. 23. CD 11/4.

▲ **PENNSYLVANIA**—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg,
Lycoming Constr. Co., Inc., 127 Susquehanna St., Williamsport 19, Pa., LB **$3,068,363.** constr. 6.62 mi. (Sec. 37-E) Northeastern exten. in Bear Creek and Dennison Twps., Luzerne Co. Bids Dec. 1. CD 11/11.

▲ **Harry C. Erb, Inc.,** 29 Bala Ave., Bala, Pa., LB **$1,739,450.** Frankford Creek Flood Control Proj., dredging, bridges, roadway, PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Samuel S. Baxter, Water Comr. Bids Nov. 23. CD 10/21.

▲† **Cramer-Vollmerhausen Co., Inc.,** 1919 Kenilworth Ave., Bladensburg, Md., LB, **$3,919,759** Dalecarlia Pumping Station, 5900 MacArthur Blvd., CIVENG-49-080-55-3, WASH., D. C. U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C. Bids Nov. 30.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Briarwood No. 3 Corp.,** c/o Seelig & Finkelstein, archts., 153 Pierrepont St., Brooklyn 2, N. Y. Owner Builds. **$2,107,500,** 6 story APARTMENT for 281-families, Main St. and 84 Ave., BRIARWOOD, N. Y. CD 3/17.

▲ **Briarwood No. 1 Corp.,** c/o Seelig & Finkelstein, archts., 153 Pierrepont St., Brooklyn 2, N. Y. Owner Builds. **$1,800,000,** 6 story APARTMENT for 240-families, 139 St. and 83 Ave., BRIARWOOD, N. Y. CD 3/17.

▲ **Albarry Constr. Corp.,** 119 W. 57 St., New York 19, N. Y., LB **$1,930,000,** general constr. Junior HIGH SCHOOL 185, 25 Dr., 149 St., 26 Ave. and 147 St., FLUSHING, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Nov. 30. CD 11/4.

▲ **Psaty & Fuhrman, Inc.,** 369 Lexington Ave., New York 17, N. Y., LB **$1,159,000,** general constr., Public School 209 Utopia Parkway and 16 Ave., E-803, WHITESTONE, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Nov. 26. CD 11/4.

▲ **Pine Estates** c/o M. Bozain, 704 Browning Rd., Pennsauken, N. J., Separate Contracts, **$2,000,000.** RESIDENTIAL DEVELOPMENT, Washington Ave., WEST BERLIN, N. J. Dante D'Anastasio, 1815 Federal St., Camden, N. J., archt.

▲ **C. DiFelice, Inc.,** 24 N. Merion Ave., Bryn Mawr, Pa. Separate Contracts. **$6,000,000.** RESIDENTIAL DEVELOPMENT, Tredyffrin Twp., BERWYN, PA.

▲ **John A. Robbins, Inc.,** 10 S. 18 St., Phila., Pa., CA **$3,500,000.** INDUSTRIAL DEVELOPMENT, Roosevelt Blvd. above Haldemann St., 16-acre tract, PHILA., PA. Owner, c/o Agent Levy-Lynch & Co., 2311 Penna. Ave., Phila., Pa. George W. Neff, 1520 Locust St., Phila., Pa., archt.

▲ **Madway Engineers & Constructors,** 107 Aberdeen Ave., Wayne, Pa., CA **$10,000,000.** four APARTMENTS, STORES and parking unit, Benjamin Franklin Parkway, 22nd to 24 Sts., PHILA., PA. Harry K. Madway, 107 Aberdeen Ave., Wayne, Pa. and Bernard Weinberg, 2409 N. Broad St., Phila., Pa. John Hans Graham & Assocs., 2430 Penna Ave. N.W., Wash., D. C., archts. CD 7/27.

▲ **Schneider & Davis,** 2040 Manontongo St., Pottsville, Pa., LB **$1,250,000.** HIGH SCHOOL, POTTSVILLE, PA. Roman Catholic Archdiocese of Phila., 310 N. 19 St., Phila., Pa. Bids Nov. 2. CD 11/5.

▲ **Roslyn Homes,** 3209 Brunswick Ave., Drexel Hill, Pa., Separate Contracts. **$1,000,000.** RESIDENTIAL DEVELOPMENT. Edgar Ave., etc., VILLAGE GREEN, PA.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
BRIDGES
December 14 West Virginia December 15 Virginia
December 17 Kentucky
STREETS AND ROADS
December 15 Virginia December 17 Kentucky
December 22 Louisiana

BIDS ASKED—BUILDINGS

▲ **La., New Orleans**—CIVIC CENTER—BA 1/11—City, Bureau Purchasing, 302 City Hall, Proposal No. 2788, civic center, city hall on site bounded by Poydras, Perdido, Loyola and LaSalle Sts. $8,800,000. Plans deposit $150. Goldstein, Parham & Labouisse, 811 American Bank Bldg., archts. CD 10/19.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Southern Roadbuilders, Inc.,** P.O. Box 1129, Augusta, Ga., CA, **$1,817,091,** airfield paving, Pinecastle Air Force Base, ORLANDO, FLA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Bids Nov. 10. CD 9/30.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

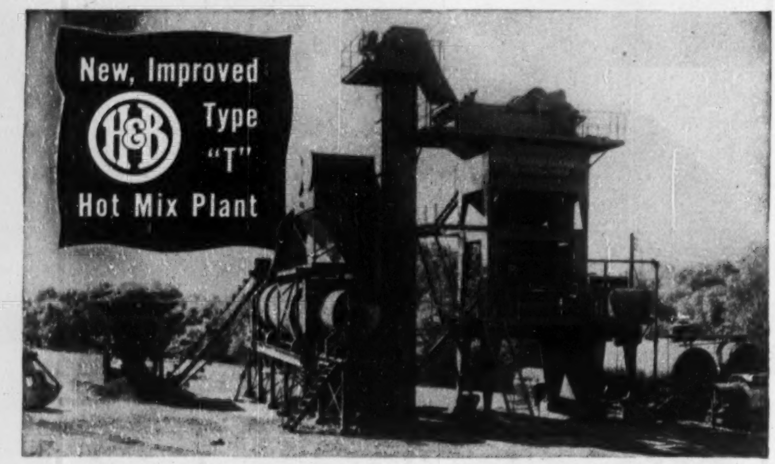
STATE HIGHWAY LETTINGS
BRIDGES
December 15 Michigan
STREETS AND ROADS
December 15 Michigan

HEAVY CONSTRUCTION

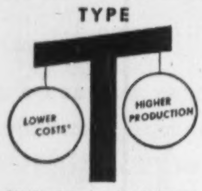
LOW BIDS AND CONTRACTS

▲ **OHIO**—State Hy. Dpt., Columbus, Zone 15,
D. R. Smalley & Sons, Inc., 436 W. Market St., Celina, O. LB **$1,351,675,** est. $1,444,600, Part 1, T-71, T-35; Part 3, T-71 and structures 3.32 mi. USR 40-(10.83-11.82) USR 40DA-0.00; USR 40-(13.43-14.10), USR 40DA-(1.59-1.68), U-556 (9), U-UG-556 (6), City of Springfield, Clark Co.;

(Continued on page 100)



Increased Production—Lower Maintenance Costs



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Trunnion Roll Drive—on dryer, eliminating vibration and reducing maintenance costs.

The new H & B Type "T" incorporates, in the basic plant, all of the major improvements of the past 20 years. New structural design and many exclusive features combine to make a plant that has already established outstanding records in both production and maintenance.

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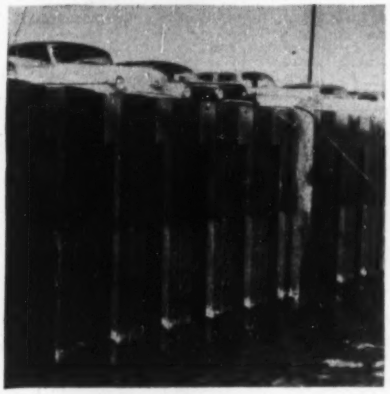
CORROSION-FIGHTING NEWS

PITT CHEM puts the Crimp on Sea Wall Corrosion



Keeping steel from being eaten alive by sea water is one of the corrosion engineer's toughest headaches. The busy Long Beach Port Harbor is solving the problem by the application of Pitt Chem Tar Base Coatings to its steel sea wall piling.

Sprayed with a 3/16" film of tar base coating, the exposed area of the 70-foot-long steel "Z" sections resist both the electrolytic action of the salt water and corrosion of the salt air. Pitt Chem Coatings also provide watertight piling joints.

No matter how tough or complex your corrosion problem may be, there's a good chance a Pitt Chem engineer can find a solution with one of the durable, economical, easy-to-apply Pitt Chem Coatings. We'll be glad to have him survey your needs—without cost or obligation.

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PITT CHEM 101—For Severest Conditions
PITT CHEM 102—Maintenance Coating
PITT CHEM 103—General Purpose Coating
PITT CHEM 104—Potable Water Service
PITT CHEM 105 AQUATAR—A Water Dispersion
PITT CHEM 106 TARMASTIC—Sealing Mastic
PITT CHEM 107 PACHKOTE—Specialty Coating
PITT CHEM 110—Coating Sealer

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PITTSBURGH
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ST. PAUL & TACOMA LUMBER CO.
TREE LIFE FOREST PRODUCTS

(Continued from page 98)

John G. Witten, Sardis, O., LB **$228,667**, est. $271,000, Type T-35 on B-119 and structure 1.358 mi. SR 76-12.42, S-181 (4), Washington Co.;

Menuez & Skemp, Millersburg, O., LB **$86,623**, est. $100,100, Type T-35 and structure 0.174 mi. SR 94-(25.80-25.85), S-828 (4), Village of Rittman, Wayne Co.;

George A. Stein Contg. Co., Chillicothe, O., LB **$101,553**, est. $114,200, Type T-35 on B-119 and structure 0.373 mi. SR 247-19.79, Adams Co.;

Walter L. Follmer, P. O. Box 173, Hamilton, O., LB **$86,586**, est. $89,000, Type T-35 on B-119 and structure 0.485 mi. SR 132-25.22, Clermont Co.;

Glen Rhoades Constr. Co., Mt. Orab, O., LB **$72,370.** est. $98,900, Type T-35, 0.273 mi. SR 222-(11.25) (18.01), Clermont Co.;

W. E. Engle, McArthur, O., LB **$73,432**, est. $83,000, Type T-35 on B-119 and structure 0.676 mi. SR 380-0.30, Clinton Co.;

The Hollinger-Davidson Co., 640 Miami St., Akron, O. LB **$167,966, est.** $185,200, Type T-71, 0.881 mi. USR 36-18.15, Coshocton Co.;

Sutton & Stewart, Inc., Main St., Bridgeport, O., LB **$75,450**, est. $77,300, Type T-35 on B-119 and structure 0.482 mi. SR 247-5.89, Highland Co.;

The Ohio Eng. Co., 105 Sixth St., Lorain, O., LB **$739,365**, est. $798,500, Type T-35 and structures, 3.487 mi. USR 20-(11.72-15.15), City of Elyria, Lorain Co.;

Wren Reese, R. R. No. 2, Napoleon, O., LB **$386,734**, est. $456,300, Type T-35 on B-119 and structures, 1.699 mi. USR 30N-(7.27-8.87) (9.03), Wyandot Co.;

cancelled bids to have been opened Nov. 23, Type T-71, 0.255 mi. USR 422-(3.22-3.37), City of Youngstown, Mahoning Co. Bids Nov. 23. CD 10/28.

▲ **INDIANA**—Indiana Toll Road Comn., 309 W. Washington St., Old Trails Bldg., Indianapolis,

Louis Garavaglia, 24240 Mound Rd., Centerline, Mich., and **Pierson Contg. Co.**, 200 Eddy Blvd., Saginaw, Mich., CA **$3,865,953.** Contracts 31 and 32, Indiana East-West Toll Road, St. Joseph Co. Bids Nov. 10, awarded Nov. 23. CD 11/12.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **James McHugh Constr. Co.**, 6449 S. South Park St., Chicago, Ill., CA **$5,000,000** general contract St. Michael's HOSPITAL, MILWAUKEE, WIS. Franciscan Sisters, 1645 N. 4 St., Milwaukee, Wis. Bids Nov. 10. CD 10/27.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
BRIDGES
December 17 Kansas, Minnesota
STREETS AND ROADS
December 16, 17 Kansas   December 17 Minnesota

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **H. B. Zachry Co.**, West Harding Blvd., San Antonio, Tex., LB, **$2,111,920**, est. $2,171,113, aircraft parking apron and maintenance aprons, Abilene Air Force Base, Inv. ENG-41-443-55-31, ABILENE, TEX. U. S. Eng., 100 W. Vickery Blvd., Fort Worth, Tex. Bids Nov. 30. CD 10/29.

▲† **C. F. Lytle & Green Constr. Co.**, Box 206, Sioux City, Ia., CA, **$6,270,790.** Glendow Dam, Power Plant foundation and roads, Oregon Trail Div., Glendow unit Missouri River Basin Proj., Spec. DC 4255, WYOMING. Bureau Reclamation, Dpt. Interior, Casper, Wyo. Bids Nov. 9, awarded Nov. 27. CD 11/11, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
BRIDGES
December 16 Washington
STREETS AND ROADS
December 16 Washington

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **D. & E. Corp.**, 8956 W. Olympic Blvd., Beverly Hills, Calif., CA **$1,657,500**, 195 frame, stucco DWELLINGS, Lyndora and Adorn Sts., BELLFLOWER, CALIF. Royalty Estates, 8956 W. Olympic Blvd., Beverly Hills, Calif.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Ontario**—BA 1/19—St. Lawrence Seaway Authority, 1225 No. 2 Temporary Bldg., Ottawa, canal and lock around Iroquois Dam at upstream end of the rapids. CD 9/9.

BUILDINGS

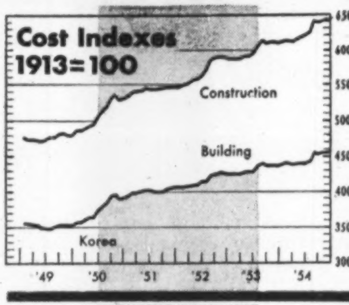
LOW BIDS AND CONTRACTS

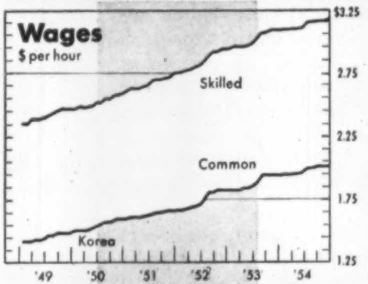
▲ **Beaurivage Gardens Ltd.**, 6541 Park Ave., Montreal, Que., Owner Builds. **$3,000,000**, 300 DWELLINGS in housing project on new streets, BOUCHERVILLE, QUE.

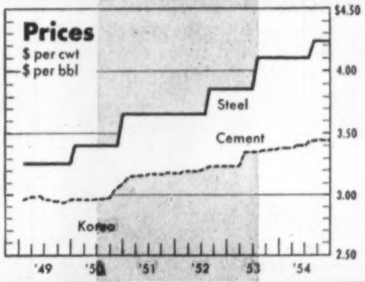
▲ **S. D. Miller & Sons**, 6999 Cote des Neiges Rd., Montreal, Que., Owner Builds. **$2,500,000**, 200-unit HOUSING DEVELOPMENT, Beavelark and Lyall Sts., MONTREAL, QUE. Eliasoph & Berkowitz, 6931 Cote des Neiges Rd., Montreal, Que., archts.

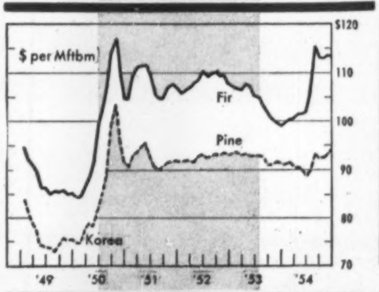
(Proposal Advertisements see pp. 115 to 118)

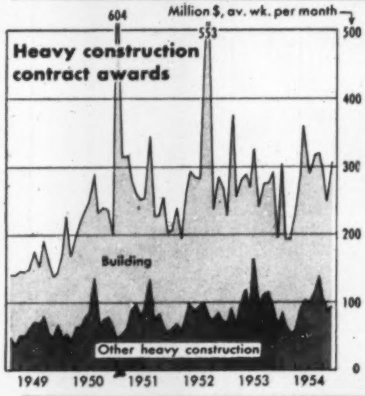
DECEMBER CONSTRUCTION SCOREBOARD











ENR INDEXES (1913=100), 20-cities' average	1954 Dec.	% Change from last Month	% Change from last Year
Construction Cost	643.31	0.0	+ 5.2
Building Cost	456.77	+0.1	+4.9
WAGE RATES, 20-cities' average			
Common	$2.022	0.0	+4.6
Skilled (aver. 3 trades)	3.186	+0.1	+3.4
Bricklayers	3.457	0.0	+2.8
Structural Ironworkers	3.164	+0.1	+4.0
Carpenters	2.936	0.0	+3.4
MATERIAL PRICES, 20-cities' average			
Cement, bulk, per bbl	3.464	0.0	+3.7
Structural Steel (3-mill aver.), per cwt	4.250	0.0	+3.7
Sand, per ton	2.251	0.0	+3.2
Lumber, 2x4 Fir, per M. ft. bm	113.222	−0.4	+14.1
Lumber, 2x4 Pine, per M. ft. bm	94.333	+1.2	+3.3
Common brick, per M	33.237	0.0	+1.0
Ready-mixed concrete, per c. y	12.237	+0.1	+2.2
Structural Clay Tile, 3x12x12 per M	162.585	0.0	+1.8

CONTRACTS AWARDED (Millions)	1954 November	1954 11 Mos. (47 weeks)	% Change from '53 November	% Change from '53 11 Mos.* (48 weeks)
Total U. S. (ENR reported)	$1,214.6	$13,038.5	+52.9	−2.5
Private	674.2	7,366.2	+66.4	−2.8
Public	540.4	5,672.3	+38.8	−2.2
Federal	132.3	1,171.7	+76.8	−10.8
ENR Volume Index, '13=100	522	482	+47.5	−4.2
NEW CAPITAL (Millions)				
Total	640.3	10,506.4	+4.5	+0.5
State & Municipal Bond Sales	576.9	5,118.1	+30.5	+18.8
Corporate Security Sales	55.2	2,499.3	−66.6	−34.5
Federal (non-federal work)	8.2	783.0	+26.2	−9.0
Federal (federal work)	0.0	2,106.5	0.0	+34.8

*Computed on weekly average

MATERIAL SHIPMENTS & LABOR SUPPLIES (millions)	1954 Sept. (S) Oct. (O)	1954 9 Mos. (9) 10 Mos. (10)	% Change from '53 Mo.	% Change from '53 Yr–Cum.
Cement, bbls, Bu. of Mines	29.058(S)	207.716(9)	+5.9	+4.0
Fabr. Struc. Steel, tons AISC	.255(O)	2.679(10)	−13.9	+3.3
Lumber, mil. ft. bm., NLMA	3.202(S)	27.526(9)	−0.9	−7.2
Lumber Prod., mil. ft. bm., NLMA	3.240(S)	27.505(9)	−7.1	−7.6
Contract Const. Employ., BLS	2.674(O)	2.624(10)†	−4.3	−0.3

† Average

ENR CONSTRUCTION & BUILDING COST INDEXES IN 21 CITIES (1913=100)

	Construction Cost Dec. '54	Construction Cost Sept. '54	Building Cost Dec. '54	Building Cost Sept. '54		Construction Cost Dec. '54	Construction Cost Sept. '54	Building Cost Dec. '54	Building Cost Sept. '54
Atlanta	474	474	400	400	Los Angeles	667	665	452	448
Baltimore	578	573	455	448	Minneapolis	697	697	492	491
Birmingham	507	488	420	409	Montreal	557	526	422	391
Boston	671	669	453	448	New Orleans	523	528	432	435
Chicago	734	734	468	467	New York	745	742	528	526
Cincinnati	642	641	445	444	Philadelphia	691	691	516	516
Cleveland	751	738	464	458	Pittsburgh	666	666	475	475
Dallas	484	487	402	405	St. Louis	687	684	477	473
Denver	632	633	467	468	San Francisco	649	631	443	423
Detroit	729	729	466	467	Seattle	676	682	414	419
Kansas City	661	661	466	466					

For indexes Sept. '48 to Sept. '54 see October 7, 1954 ENR, pages 95, 97

JENKINS PRACTICAL PIPING LAYOUTS

68

How to plan a

HIGH PRESSURE — HIGH TEMPERATURE HOT WATER PIPING SYSTEM

For many applications, a high pressure—high temperature system, like the one illustrated here, offers several distinct advantages over a steam system. It provides for efficient space heating and water heating, and also for numerous processing needs, such as dye vats, plating tanks and evaporators.

Often operated at pressures up to 215 psi, with a corresponding temperature of 388°F, a HP-HT system of this type employs a simpler piping design that eliminates the need for pitch, drainage, or traps. It provides a far greater amount of heat transmission for a given pipe size and, since makeup is extremely low, requires no feed-water treatment. Also, when this system is used for processing services, there are no large pressure drops due to sudden load conditions.

The hot water is generated in a shell and tube heat exchanger by means of high pressure steam from either turbine extraction or turbine exhaust. A closed expansion tank maintains constant pressure within the system. Water is circulated by regular closed expansion tank maintains constant pressure boiler feed type centrifugal pumps to all uses. A high pressure makeup pump delivers the small amount of makeup required. As shown in the diagram a recording and integrating Btu meter indicates thermal energy consumed by equipment.

Unit heaters on the HP-HT lines provide for space heating requirements. A shell and tube heat exchanger supplies warm water for lavatories, kitchens, and processing which requires moderate temperatures.

When accumulators are used another important advantage of this system is the storage of steam in excess of the HP-HT demand. This feature is particularly desirable when the load on the turbine from which the steam is extracted or exhausted is not in coincidence with the system's demand. Under these circumstances, steam may be drawn from the accumulators to meet the increased HP-HT requirements. Thus, the need for taking additional steam directly from the steam generating source is decreased or eliminated, with a better plant heat balance as a direct result.

Jenkins Fig. 1010-CM Cast Steel Gate Valves are recommended for the thermostatic steam admission valve shutoffs in this system. For 300 lb. service, at temperatures to 850°F, they are made of carbon molybdenum alloy steel, with stainless steel wedges (up to 8″ size) and H-monel seat rings. The rising spindle serves to indicate the position of the wedge. Operating threads are on the outside, allowing easy cleaning and lubrication.

Consultation with accredited piping engineers and contractors is recommended when planning any major piping installation.

To save time, to simplify planning, to get all the advantages of Jenkins specialized valve engineering experience, select all the valves you need from the complete Jenkins line. It's your best assurance of *lowest cost in the long run.* Jenkins Bros., 100 Park Ave., New York 17. Sold through Leading Industrial Distributors everywhere.

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Valves

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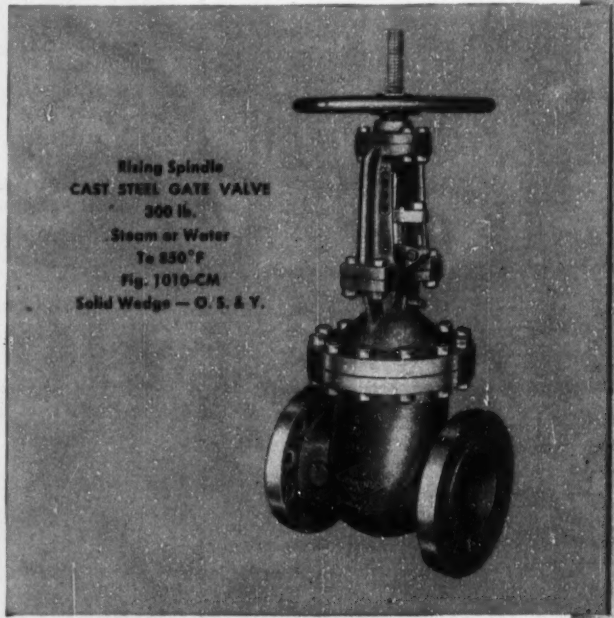
Company...

Address...



JENKINS
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VALVES
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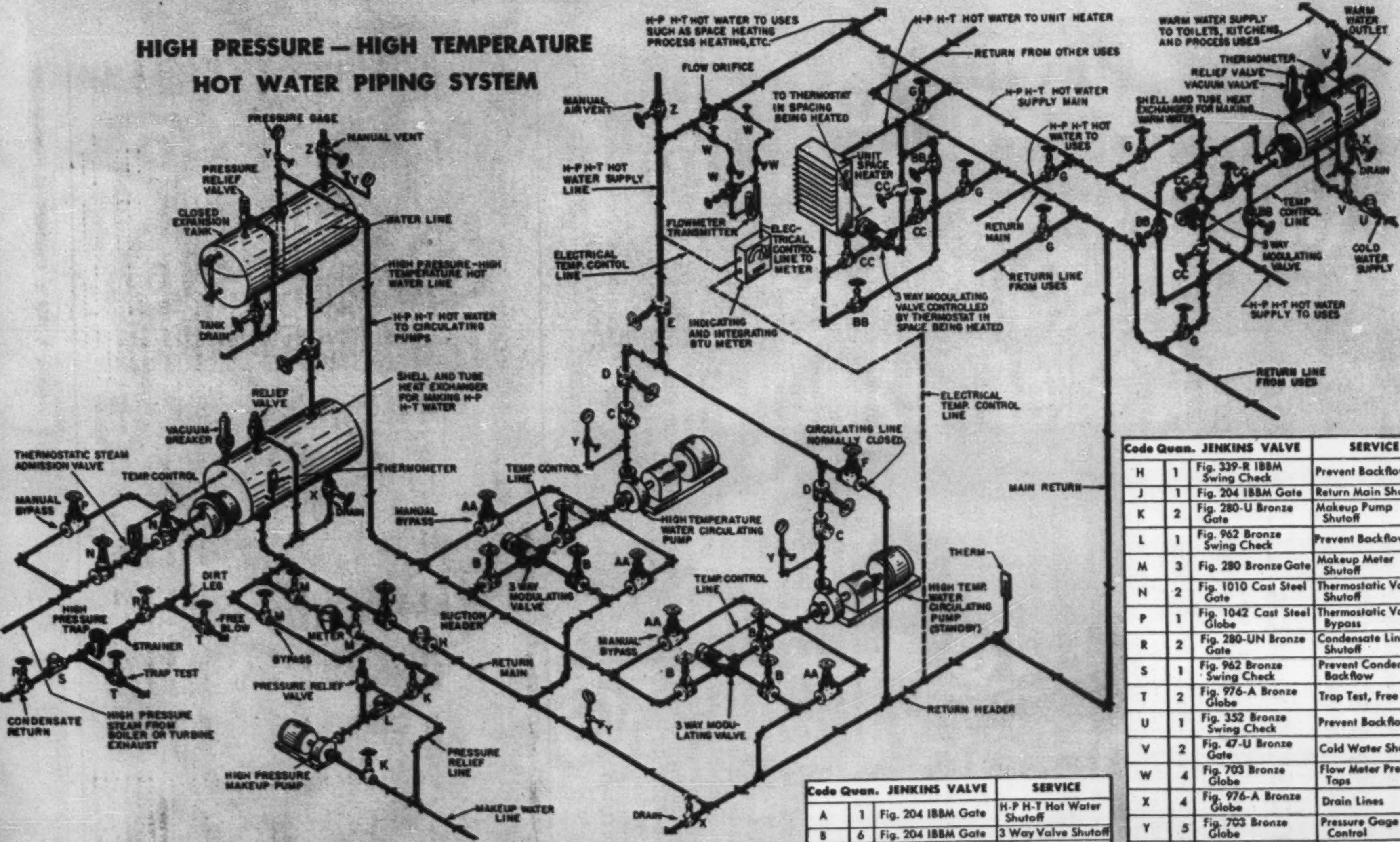
HIGH PRESSURE — HIGH TEMPERATURE
HOT WATER PIPING SYSTEM


PRESSURE GAGE
MANUAL VENT
PRESSURE RELIEF VALVE
CLOSED EXPANSION TANK
WATER LINE
HIGH PRESSURE—HIGH TEMPERATURE HOT WATER LINE
TANK DRAIN
H-P H-T HOT WATER TO CIRCULATING PUMPS
SHELL AND TUBE HEAT EXCHANGER FOR MAKING H-P H-T WATER
RELIEF VALVE
VACUUM BREAKER
THERMOSTATIC STEAM ADMISSION VALVE
TEMP. CONTROL
MANUAL BYPASS
THERMOMETER
DRAIN
DIRT LEG
HIGH PRESSURE TRAP
FREE BLOW
STRAINER
TRAP TEST
CONDENSATE RETURN
HIGH PRESSURE STEAM FROM BOILER OR TURBINE EXHAUST
BYPASS
METER
SUCTION HEADER
RETURN MAIN
PRESSURE RELIEF VALVE
PRESSURE RELIEF LINE
HIGH PRESSURE MAKEUP PUMP
MAKEUP WATER LINE
MANUAL BYPASS
TEMP. CONTROL LINE
3 WAY MODULATING VALVE
HIGH TEMPERATURE WATER CIRCULATING PUMP
MANUAL AIRVENT
H-P H-T HOT WATER SUPPLY LINE
ELECTRICAL TEMP. CONTOL LINE
FLOW ORIFICE
FLOWMETER TRANSMITTER
ELECTRICAL CONTROL LINE TO METER
INDICATING AND INTEGRATING BTU METER
H-P H-T HOT WATER TO USES SUCH AS SPACE HEATING PROCESS HEATING, ETC.
TO THERMOSTAT IN SPACING BEING HEATED
UNIT SPACE HEATER
3 WAY MODULATING VALVE CONTROLLED BY THERMOSTAT IN SPACE BEING HEATED
H-P H-T HOT WATER TO UNIT HEATER
RETURN FROM OTHER USES
H-P H-T HOT WATER SUPPLY MAIN
H-P H-T HOT WATER TO USES
RETURN MAIN
RETURN LINE FROM USES
ELECTRICAL TEMP. CONTROL LINE
CIRCULATING LINE NORMALLY CLOSED
MAIN RETURN
THERM
TEMP. CONTROL LINE
HIGH TEMP. WATER CIRCULATING PUMP (STANDBY)
MANUAL BYPASS
3 WAY MODULATING VALVE
RETURN HEADER
DRAIN
WARM WATER SUPPLY TO TOILETS, KITCHENS, AND PROCESS USES
WARM WATER OUTLET
THERMOMETER
RELIEF VALVE
VACUUM VALVE
SHELL AND TUBE HEAT EXCHANGER FOR MAKING WARM WATER
DRAIN
TEMP. CONTROL LINE
3 WAY MODULATING VALVE
COLD WATER SUPPLY
H-P H-T HOT WATER SUPPLY TO USES
RETURN LINE FROM USES
A
B
C
D
E
F
G
H
J
K
L
M
N
P
R
S
T
U
V
W
X
Y
Z
AA
BB
CC

Code	Quan.	JENKINS VALVE	SERVICE
A	1	Fig. 204 IBBM Gate	H-P H-T Hot Water Shutoff
B	6	Fig. 204 IBBM Gate	3 Way Valve Shutoff
C	2	Fig. 339-R IBBM Swing Check	Prevent Backflow
D	2	Fig. 204 IBBM Gate	Pump Discharge Shutoff
E	1	Fig. 204 IBBM Gate	Supply Line Shutoff
F	1	Fig. 923 IBBM Globe	Circulating Line Shutoff
G	6	Fig. 280 Bronze Gate	Branch Shutoffs

Code	Quan.	JENKINS VALVE	SERVICE
H	1	Fig. 339-R IBBM Swing Check	Prevent Backflow
J	1	Fig. 204 IBBM Gate	Return Main Shutoff
K	2	Fig. 280-U Bronze Gate	Makeup Pump Shutoff
L	1	Fig. 962 Bronze Swing Check	Prevent Backflow
M	3	Fig. 280 Bronze Gate	Makeup Meter Shutoff
N	2	Fig. 1010 Cast Steel Gate	Thermostatic Valve Shutoff
P	1	Fig. 1042 Cast Steel Globe	Thermostatic Valve Bypass
R	2	Fig. 280-UN Bronze Gate	Condensate Line Shutoff
S	1	Fig. 962 Bronze Swing Check	Prevent Condensate Backflow
T	2	Fig. 976-A Bronze Globe	Trap Test, Free Blow
U	1	Fig. 352 Bronze Swing Check	Prevent Backflow
V	2	Fig. 47-U Bronze Gate	Cold Water Shutoff
W	4	Fig. 703 Bronze Globe	Flow Meter Pressure Taps
X	4	Fig. 976-A Bronze Globe	Drain Lines
Y	5	Fig. 703 Bronze Globe	Pressure Gage Control
Z	2	Fig. 976-A Bronze Globe	Air Vents
AA	4	Fig. 923 IBBM Globe	3 Way Valve Bypass
BB	4	Fig. 976-A Bronze Globe	3 Way Valve Bypass
CC	6	Fig. 280 Bronze Gate	3 Way Valve Shutoff

Diagram by Huxley Madeheim, Consulting Engineer

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For details of valves to suit varying conditions, see Jenkins Catalog.

BUSINESS AND FINANCE

November Awards 22% Over October, Set All-Time Record

Nearly all major types of construction share in the rise. Total volume for 11 months is now only 3% behind last year

Construction awards reported to ENR in November set a new high for the month by a wide margin of 12% over the previous record set in 1952. The total was $1,215 million, 22% ahead of October, and a whopping 53% ahead of November 1953.

This surge in November contract volume pushes total awards for the year so far to 3% behind the same 1953 period. The gap was 6% at the end of October. For the first 11 months, contracts top $13 billion. Of this, private construction accounts for nearly $7.4 billion, 3% behind the record private volume in the same 1953 period. State and municipal awards total $4.5 billion, just 0.3% ahead of the previous high in 1953. The high volume of federal awards in November cut the decline in this category from 16% at the end of October to only 11% at the end of November.

Nearly all major types of public and private work shared in the rise from October. State and municipal awards climbed 5% to $408 million, a new record for the month and 30% ahead of November 1953. Federal work racked up $132 million in awards. That's an 11% gain from October, and 77% more than a year ago.

• **Public works**—Combining both state and municipal awards and federal contracts, nearly all types rose last month. The only exceptions: waterworks, and earthwork & drainage. Waterworks was the only major category that failed to pass the level of a year ago. Total public awards were over $540 million.

• **Private awards**—Private construction also set a new record for November, with a total of $674 million. This just topped the previous November high in 1952, and was almost 29% ahead of October 1953. Compared with a year ago, private awards were up 66%. However, the year-end figure was very low—$405 million.

Industrial and commercial building and mass housing all contributed to the high November volume with gains over October. Commercial and housing awards were also far ahead of the year-ago totals.

Housing contracts jumped to $377 million last month, more than twice the November 1953 volume and a new high for the month. Commercial awards topped $149 million, also more than double the year-ago mark. Industrial building awards were also higher in November—10% above October. However, they were 13% below last year.

• **Regions**—New England contracts continued at a fast clip last month. The 11-month total is already ahead of the record annual high set last year. And it is 18% ahead of the same 11-month period last year.

November awards were also heavy in the Middle Atlantic states, contracts there totaled $349 million, 46% more than October 1954, and more than double the year-ago volume.

Business also is continuing to improve rapidly in the West-of-Mississippi region. The total there for the year so far is now 8% ahead of 1953, which was the record year for this region.

The Far West has reduced the 1953-1954 gap to 6%, compared with a 10% decline at the end of October. And in the Mid-West, volume is only 13% behind last year. It was 15% at the end of October.

The South continues to show the greatest decline in heavy construction so far this year. Awards are down 25% at the end of the first 11 months. However, that is a slight improvement from the 26% decline at the end of October.

(*B&F continued on page 108*)

ENGINEERING CONSTRUCTION CONTRACTS—NOVEMBER 1954

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000*

Four Weeks—Thousands of Dollars (000 Omitted)

	November, 1954							U. S. Cumulative Eleven Months		% Change	
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1954 (47 weeks)	1953 (48 weeks)	'53 to '54 Av. Wk.	Canada November 1954
Public Works											
Waterworks	1,015	2,000	2,375	3,512	8,119	2,557	**19,578**	**219,619**	214,186	+ 5	3,475
Sewerage	2,175	18,734	1,275	3,356	4,872	9,733	**40,145**	**357,783**	400,642	− 9	1,462
Bridges	1,908	8,031	20,808	3,662	3,198	1,932	**39,539**	**449,340**	623,809	−26	2,662
Earthwork and drainage	136	1,724	3,450	11	7,650	2,678	**15,649**	**287,971**	335,324	−12	752
Streets and roads	6,611	51,527	22,502	34,527	18,733	15,276	**149,176**	**1,729,477**	1,646,366	+ 7	3,742
Public buildings, residential	803	1,959	10,901	....	23,531	5,357	**42,551**	**240,838**	363,683	−32	9,035
Other public buildings	14,392	42,398	17,330	22,790	26,044	20,497	**143,451**	**1,592,736**	1,577,103	+ 3	20,993
Unclassified	1,309	8,923	25,302	20,008	21,002	13,801	**90,345**	**794,575**	762,883	+ 6	9,596
Total public	**28,349**	**135,296**	**103,943**	**87,866**	**113,149**	**71,831**	**540,434**	**5,672,339**	**5,923,996**	**− 2**	**51,717**
Federal government (included in above classifications)	2,949	19,447	27,991	20,182	38,157	23,617	**132,343**	**1,171,651**	1,341,189	−11	27,732
Private											
Bridges	2,738	....	....	600	100	....	**3,438**	**10,388**	8,865	+19	....
Industrial buildings	8,002	7,106	30,807	63,547	13,803	5,645	**128,910**	**1,701,595**	2,608,845	−33	42,564
Mass housing	4,120	150,227	3,581	51,514	129,791	37,960	**377,193**	**3,868,953**	3,224,973	+23	46,270
Commercial buildings	3,732	55,791	4,392	19,558	42,334	23,483	**149,290**	**1,272,149**	1,066,484	+22	11,429
Unclassified	....	988	798	2,292	11,146	93	**15,317**	**513,123**	826,809	−37	7,282
Total private	**18,592**	**214,112**	**39,578**	**137,511**	**197,174**	**67,181**	**674,148**	**7,366,208**	**7,735,976**	**− 3**	**107,545**
Total Engineering Construction:											
November, 1954—4 weeks	**46,941**	**349,408**	**143,521**	**225,377**	**310,323**	**139,012**	**1,214,582**	....	....	....	**159,262**
October, 1954—4 weeks	40,892	239,422	152,991	153,311	276,929	132,236	**995,781**	....	....	....	95,531
November, 1953—4 weeks	44,756	171,780	146,034	168,848	177,023	85,874	**794,315**	....	....	....	101,729
Eleven Months—1954	**663,457**	**3,380,309**	**1,776,649**	**2,612,546**	**3,059,489**	**1,546,097**	....	**13,038,547**	....	**− 3**	**1,492,488**
Eleven Months—1953	573,463	3,049,021	2,405,641	3,053,364	2,894,360	1,684,123	....	....	13,659,972	....	1,189,867
% Change '53 to '54 (Av. Wk.)	+18	+13	−25	−13	+8	−6	....	....	....	....	+28

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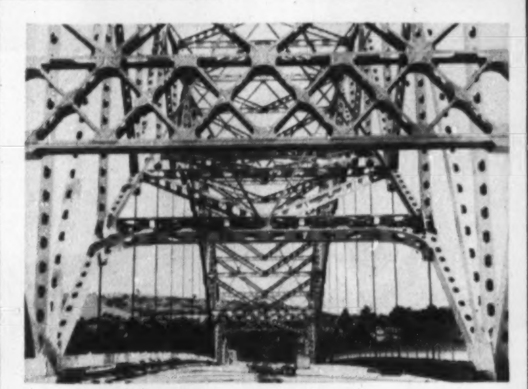

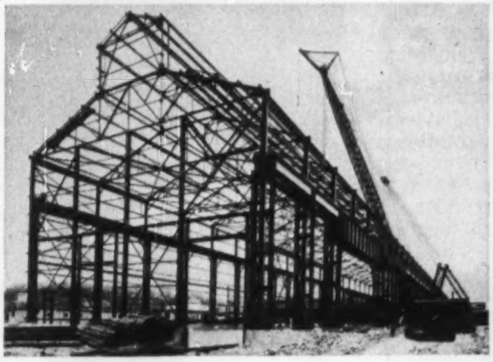

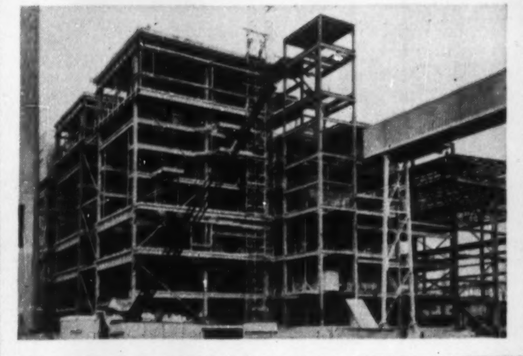

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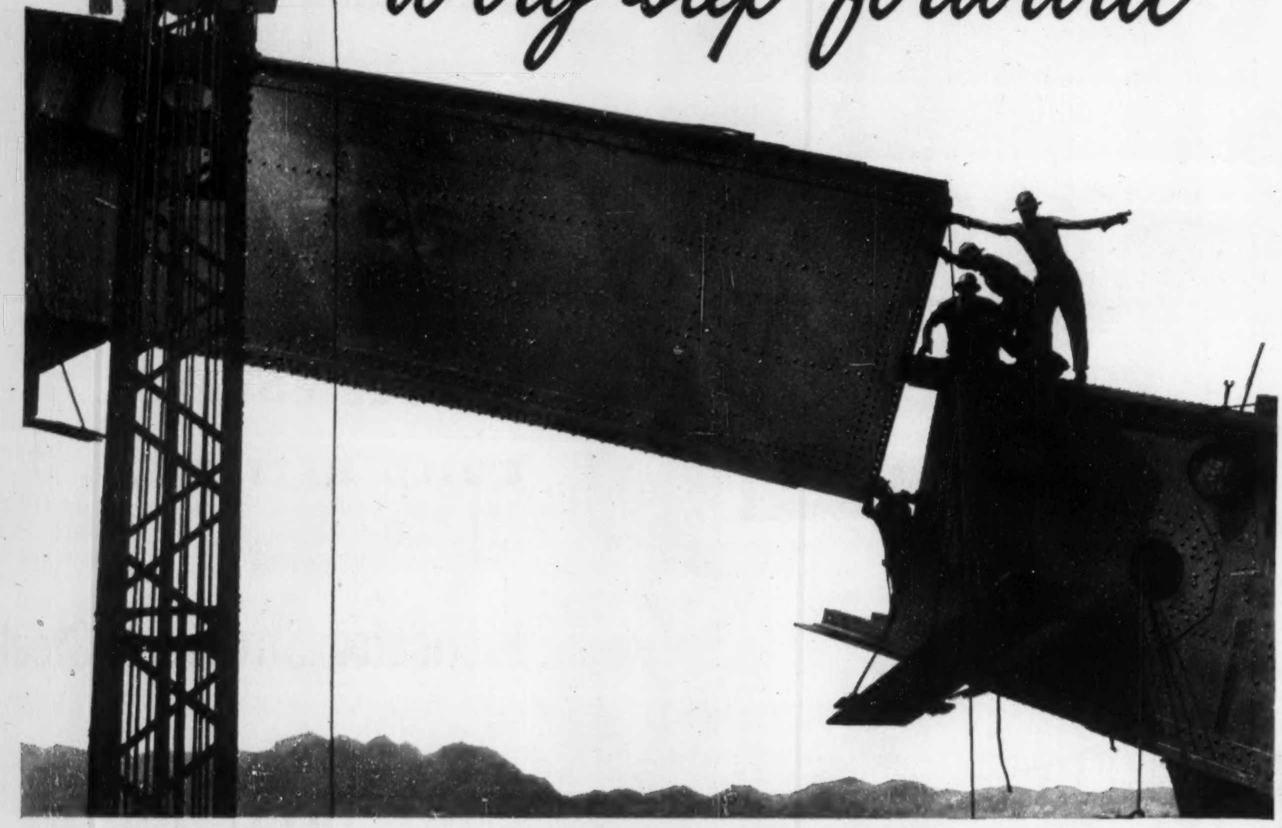
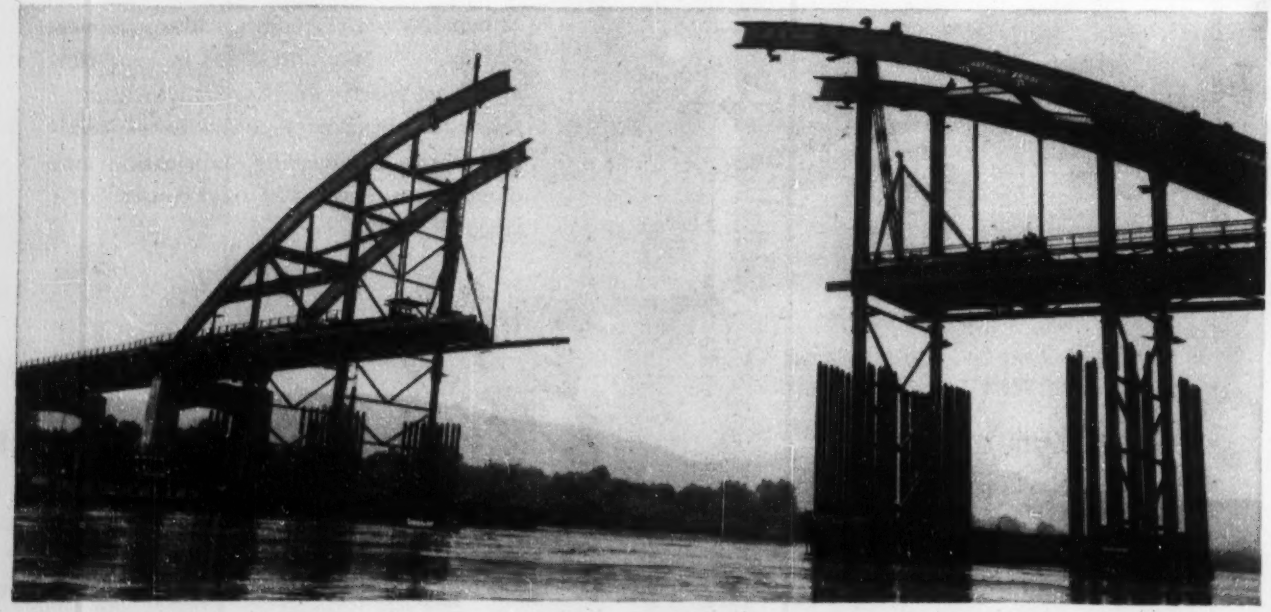


2,500 tons of USS MAN-TEN Steel—45% of the total structural steel involved—are used in this bridge spanning the Ohio River at Wheeling, W. Va. Used in the main stress-carrying members of the 580 ft. tied-arch span and for the main members of the 160 ft. to 200 ft. continuous girder spans in the approaches, USS MAN-TEN Steel gave the bridge engineers the advantages of higher yield point, greater durability and twice the atmospheric corrosion resistance of ordinary construction. It also provided the fabricator with a more easily fabricated steel at a savings in cost of material.



in bridge construction...

USS High Strength Steels

...that pay off in greater strength, easier fabrication, high corrosion resistance and lower costs

SOMETHING new and important has been happening to bridge structures. Improved design, improved fabrication techniques, improved erection methods, and lower costs—all made possible by increasing use of *stronger, more durable steels.*

For in high strength steels, like USS MAN-TEN, USS TRI-TEN "E" and USS COR-TEN, bridge engineers have found superior materials of construction with which they can build safer, more dependable structures for long term, continuous operation, often at lower costs than hitherto.

A number of bridges, both large and small, have already been constructed with these high strength steels. In many of the most important bridges now being erected or projected for the future, these superior steels are being used or are specified. And for good reason.

All these famous "steels that do more" have higher yield points than structural silicon steel in thicknesses up to and including 1½". All have at least twice the atmospheric corrosion resistance. All, regardless of thickness, have greater ductility.

As a result, their use in structural members makes it possible for the designer to obtain greater strength with no increase in weight, or to reduce weight without any sacrifice in strength. And always, to ensure greater durability.

Maximum results can be obtained from these steels by taking advantage of their specific characteristics. For example, USS MAN-TEN Steel is intended primarily for use in structural members of riveted and bolted bridges requiring high strength with atmospheric corrosion resistance equal to that of copper steel.

While USS TRI-TEN "E" Steel can also be used for riveted bridges, it is particularly applicable where *weldability* is a primary consideration, and where structural members must withstand moderately severe impacts in low temperature service. This steel combines high strength and unusual toughness with atmospheric corrosion resistance equal to that of copper steel.

USS COR-TEN Steel — which has two to three times the atmospheric corrosion resistance of copper steel—can be relied upon to materially prolong life wherever corrosive conditions are severe. For instance, it can be used for blast plates on bridges passing over railroads and for ballast plates on railroad bridges.

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← **New 9th Street Bridge at Wheeling, West Virginia**

Now nearing completion, the new Ohio River crossing illustrated here is a typical example of the growing use of USS High Strength Steels in present-day bridge construction.

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USS MAN-TEN Steel spans fabricated and erected by American Bridge Division of United States Steel.

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USS HIGH STRENGTH STEELS

USS MAN-TEN • USS COR-TEN • USS TRI-TEN

UNITED STATES STEEL

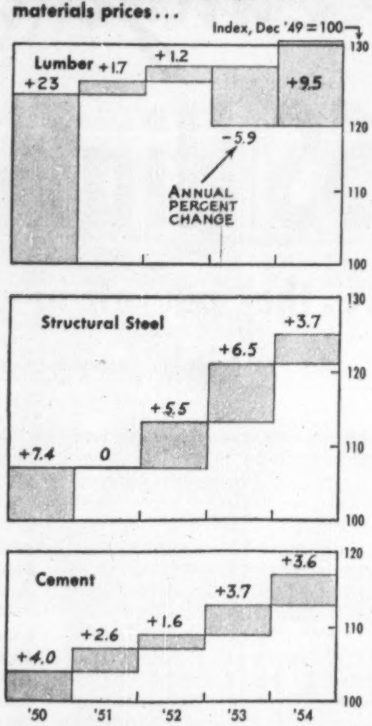
Building Cost and Price Roundup

Indexes, 1913 = 100

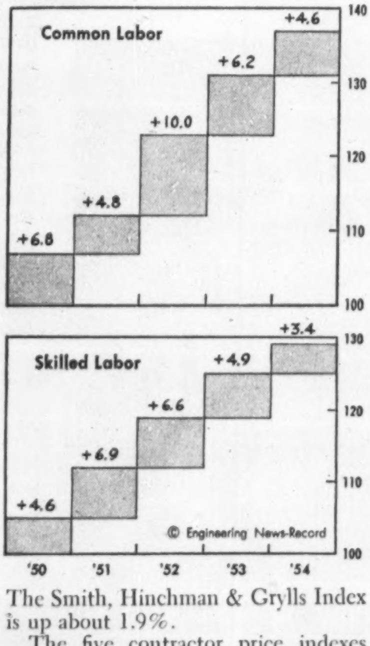
		1954					
Weighted cost indexes	**Orig. base**	**Mar.**	**June**	**Sept.**	**Oct.**	**Nov.**	**Dec.**
ENR Construction Cost....	1913 = 100	614	622	641	642	643	**643**
ENR Building Cost.......	1913 = 100	437	440	454	456	456	**457**
Assoc. Gen. Contractors...	1913 = 100	420	424	431	432	**432**	...
American Appraisal*.....	1913 = 100	586	589	**595**	...	...	...
Weighted price indexes**							
Boeckh, comm'l. & mfg....	1926-29 = 100	446	449	**454**	...	...	...
Smith, Hinchman & Grylls..	1926 = 100	496	498	501	501	**505**	...
Contractor price indexes							
Aberthaw***	1914 = 100	393	393	**395**	...	...	...
Austin	1926 = 100	350	352	**353**	...	...	...
Fuller	1913 = 100	448#	452†	...	**455**	...	...
Turner	1939 = 100	487#	487†	...	**487**	...	...

*Adjusted for estimated productivity.
**Includes overhead, profit; adjusted for estimated productivity.
***Indexes shown are based on 1914 = 100. #April. †July.

Annual cost trends in materials prices...



wage rates...



Costs Rise Faster This Year, Spurred on by Lumber Strike

This summer's long strike at Pacific Northwest lumber mills has pushed up ENR's cost indexes faster this year than in 1953 (charts).

While prices of other key materials used in ENR's Construction Cost Index and Building Cost Index climbed at a relatively slow pace, fir prices rocketed 14.1% because of strike-created shortages and heavy demand. Pine prices reflected the fir shortage, rising 3.5% during the year. So the combined 20-cities average of fir and pine prices, which is used in both ENR indexes, rose 9.5%. This lumber component has been more volatile than the others.

• **Wage boosts**—As expected, wage increases this year were lower than in 1953. However, many were bigger than the 7.5 cents to 10 cents per hr range which had been expected. One reason for this: the pickup in construction last spring while new contract talks were in progress.

Bricklayers, for instance, averaged higher raises this year than in 1953 in the 20 U. S. cities. But they won these boosts in only 13 cities, compared with 18 in 1953. Increases averaged 14.3 cents per hr, compared with 11.3 cents in 1953. Carpenters signed new contracts for higher wages in 16 cities, they averaged hikes of 12.1 cents per hr, compared with 16.0 cents in 1953.

Structural ironworkers had the most widespread increases of the three key trades included in ENR's skilled labor component. They got raises in 19 cities, averaging 13.2 cents per hr. Last year, the average was 18.8 cents in 19 cities.

Common labor unions in 19 cities averaged 9.4 cents per hr in boosts, compared with 11.8 cents last year.

• **New records**—The result of all this is that ENR's Construction Cost Index has reached a new high of 643.31 this December, up 5.2% this year compared with a 4.0% increase last year. The Building Cost Index also is at a new high, up 4.9% to 456.77. Its rise last year was 2.6%. Both indexes are based on 1913=100.

• **Other indexes**—The table shows what has been happening to the other indexes. The weighted index of materials and labor costs kept by Associated General Contractors has moved up about 3.3% since the start of this year. American Appraisal Co.'s weighted index covering four types of buildings also has moved up about 1.7% since the start of the year.

There are also a number of price indexes which measure what contractors charge for their finished work, as distinguished from their costs. The latest available figures show a range of increases this year that is lower than the range of increases in costs. This indicates the squeeze on contractor profit margins still continued this fall.

Of two weighted price indexes, the Boeckh Index for five types of commercial and factory buildings is up about 0.6% since the start of the year. The Smith, Hinchman & Grylls Index is up about 1.9%.

The five contractor price indexes show trends in actual prices charged for finished work. Latest available indexes show a fairly wide variance, ranging from a 2.2% decline for the Fuller Index since the start of the year, to a 2.2% gain for Turner. The Aberthaw indicator shows a 0.8% gain, and Austain is up 1%.

"Wolfson, Inc."

MC&S plans to acquire 3 other Wolfson interests

Louis E. Wolfson, the fabulous financier who controls Merritt-Chapman & Scott Corp., moved last week to put most of his interests under one corporate hat.

MC&S will propose a stock merger to stockholders of New York Shipbuilding Corp., Devoe & Raynolds Co., Inc., and Tennessee Products & Chemical Corp. Wolfson also controls the first two companies and has a minority interest in Tennessee Products. Directors of all three firms have approved the proposal, by which stockholders would exchange their stock for MC&S common stock.

The merger would create a many-sided firm with gross assets of more than $200 million and net worth of about $129 million. Gross 1953 revenues of these four companies were over $400 million.

• Integration—The four have more in common than might at first appear. MC&S has subsidiaries making steel and construction equipment, also electronic assemblies and TV cabinets. New York Ship makes heavy industrial equipment, and through its recently acquired Nesco Division produces electrical appliances, housewares, and steel containers. Through an affiliate, it makes earth-boring machines. Devoe & Raynolds makes paints and related products. Tennessee makes building materials, metallurgical and chemical products, and fuels.

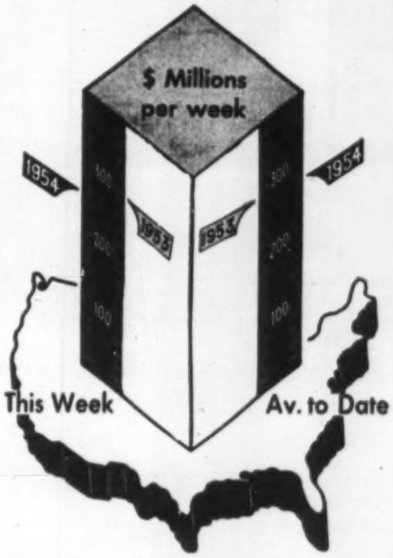
When asked for a statement, Wolfson said: "The wide yet interrelated range of products and services . . . can most productively be developed by this contemplated action. Integration of skills, manpower, equipment and other resources offers each company an increased opportunity."

Along with this offer, MC&S will seek to clean up its present corporate setup by trying to acquire the few remaining outstanding shares of three recently acquired subsidiaries: Newport Steel Co., Marion Power Shovel Co., and Marion's subsidiary, Osgood Co. To get the necessary stock for all this, MC&S is filing a registration statement for 2,960,000 shares with the Securities & Exchange Commission.

The only other major Wolfson interest in a publicly owned company that is not included in the merger is Capital Transit Co., Washington, D. C.

Activity This Week

As reported to ENR
(in millions of dollars)



Amount of contracts let

	This Week	Cumulative 49 wks 1954	1953	% chge
Federal	$18.4	$1,212.2	$1,353.1	—10
State and municipal ...	83.6	4,668.8	4,688.4	—0.4
Total public....	102.0	5,881.0	6,041.5	—3
Total private...	156.3	7,718.6	7,912.8	—2
U. S. total.....	$258.3	$13,599.6	$13,954.3	—3

Contracts by type of work

	This Week	1954	1953	% chge
Waterworks	$3.5	$226.3	$232.5	—3
Sewerage	4.5	367.5	406.7	—10
Bridges	7.8	476.6	644.4	—26
Highways	34.9	1,795.7	1,670.5	+7
Earthwork, waterways ...	8.4	299.8	341.0	—12
Buildings:				
Public, excl. hsg.	24.6	1,650.4	1,615.5	+2
Housg., public.	0.9	244.3	369.0	—34
Housg., private	103.7	4,049.1	3,291.3	+23
Commercial ..	31.0	1,356.5	1,107.6	+22
Industrial ...	18.9	1,782.3	2,660.4	—33
Unclassified	20.1	1,351.1	1,615.4	—16
Total	$258.3	$13,599.6	$13,954.3	—3

NOTE: Minimum size projects included are: Waterworks and waterways, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction

(millions of dollars)	Week of Dec. 2 1954	Cumulative 48 Wks 1954	% chge '53-'54
Corporate securities......	$18.4	$2,517.7	—35
State and municipal:			
All except housing.....	42.1	5,069.2	+25
Housing	...	91.0	—65
Federal loans	0.4	110.0	+2
Federal aid	...	673.0	—13
Total non-federal	$61.0	$8,460.9	—7
Federal appropriations:			
In U. S...............	...	$2,073.3	+32
Outside U. S..........	...	33.2	+15
Total new capital.........	$61.0	$10,567.4	—1

ENR cost and volume indexes, 1954

		Base years = 100 1913	1926	1949
Construction cost	12/2/54†	643.31	309.24	134.86
	10/28/54†	643.02	309.10	134.80
Building cost	12/2/54†	456.77	246.92	129.84
	10/28/54†	456.34	246.68	129.72
Volume	Nov.	522	212	151
	Oct.	423	172	122

† Official monthly indexes for Dec. and Nov. 1

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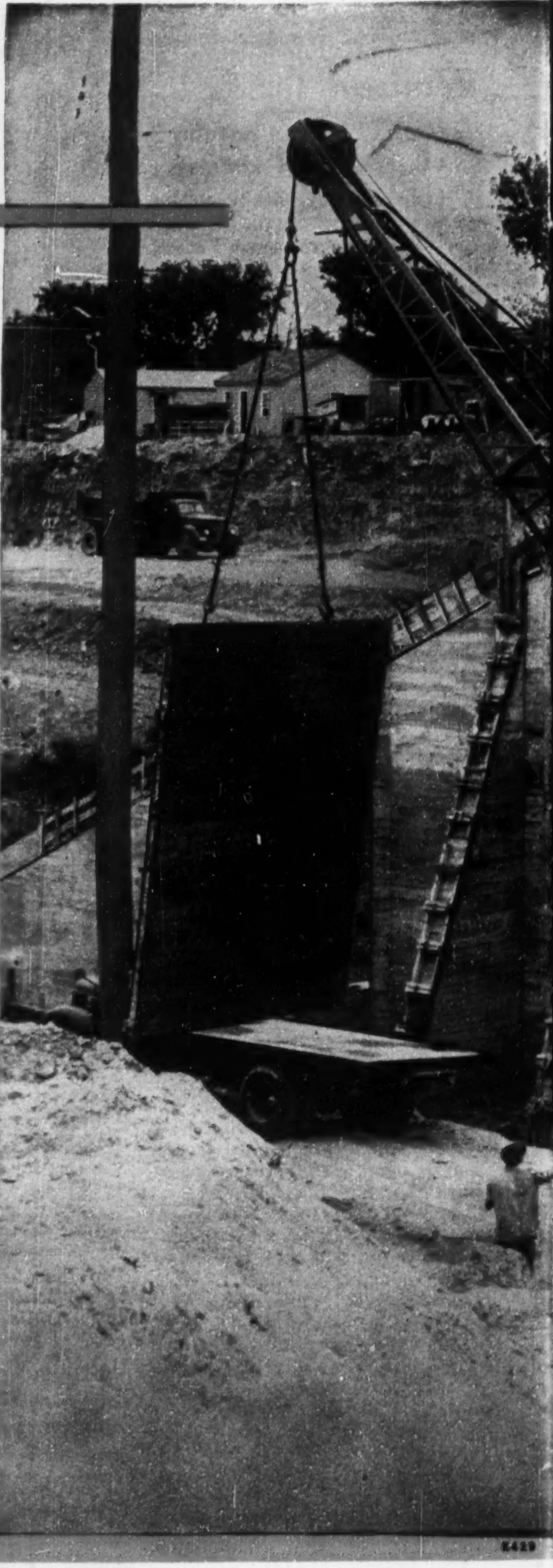
There is a very quick way to determine which crane or excavator offers you biggest production capacity per dollar of equipment investment. Compare machines on the basis of price per pound of lifting capacity.

Remember, lift capacity is *work capacity*. Obviously, the machine with the heaviest lift rating not only picks up larger crane loads — it also has more strength and stability to handle bigger dragline and clamshell buckets on a wider work range — more power and speed to increase shovel and hoe production.

Check the Koehring lift ratings shown below — then ask your Koehring distributor to show you the figures on price per pound of lifting capacity.



compare for yourself:

KOEHRING MODEL	SIZE DIPPER	KOEHRING LIFT CAPACITIES (Crawler ratings based on 75% of tipping load. Rubber-tired machines — 85% of tipping lopd)		PRICE PER POUND OF LIFT CAP.*
205 CRAWLER	½-Yd.	20,000 lbs.	30-foot boom at 10-ft. radius	?
205 ON RUBBER	½-Yd.	30,000 lbs.	25-foot boom at 12-ft. radius	?
304 CRAWLER	¾-Yd.	27,800 lbs.	35-foot boom at 12-ft. radius	?
304 ON RUBBER	¾-Yd	50,000 lbs.	30-foot boom at 10-ft. radius	?
405 CRAWLER	1-Yd.	40,000 lbs.	40-foot boom at 12-ft. radius	?
605 CRAWLER	1½-Yds.	72,300 lbs.	50-foot boom at 12-ft. radius	?
1005 CRAWLER	2½-Yds.	159,000 lbs.	50-foot boom at 12-ft. radius	?

KOEHRING HEAVY DUTY

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Utilities a Target

Building Trades Councils look for bigger share of new construction work

Concerned over the way western utility companies get their construction work done, the AFL Far Western Conference of Building Trades Councils has moved into action.

It contends that new construction—which it says is a multi-million-dollar business—belongs to construction men and not to maintenance men. Its first step toward a redistribution of the work is a request to AFL headquarters in Washington to define new construction as related to utilities.

This decision was reached at the Far Western Conference's second annual convention held Nov. 27-28 in San Francisco.

A spokesman for the conference said utility companies have been hiring maintenance men to do new construction work at a lower rate than construction men would demand. "Worse yet," said the spokesman, "they have hired non-union laborers to fill out the work force."

The complaint, of course, is an old one to the construction trades. For years they have carried on at least verbal war against the force-account operations of state and other governmental construction agencies; and against major manufacturers who have made a practice of doing maintenance and other plant construction with their own maintenance forces.

Work involved in the jurisdictional dispute with the utilities includes construction of new pipelines, substations, buildings, roads and high tension lines.

Permitting maintenance men to do such work for repair purposes is the opening wedge, the spokesman said, leading to increasing use of maintenance men on new projects.

One solution to the problem, building trades feel, would be memoranda of understanding with utilities guaranteeing that new work would be let to private contractors.

NLRB Applies New Standards

To the $64 question—how will the NLRB apply its new jurisdictional standards to a dispute involving an association of employers?—the board has answered:

"Under the new standards, in determining whether to assert jurisdiction, the board will continue to consider the totality of the operations of the association members."

Involved in the dispute which evoked this announcement was the Insulation Contractors of California, Inc., which for a number of years had negotiated a single collective bargaining agreement with the union. In this type of bargaining, the board saw a desire on the part of all association members to be bound in their labor relations by joint rather than individual action. Thus, it reasoned, the association members constituted a single employer within the meaning of the Taft-Hartley Act.

Since the association members, in the aggregate, did more than $50,000 worth of business outside of California, the board was compelled to assert jurisdiction.

The standard in question—adopted by a board majority consisting of Farmer, Rodgers and Beeson—extends jurisdiction to an enterprise which annually produces or handles and ships goods out of state, or performs services outside the state, valued at $50,000 or more.

Compromise Called Key In Wage Arbitration Cases

Most arbitrated wage cases are compromises between union and management proposals—seldom is the position of either side completely sustained.

And in the mind of the arbitrator, the key question seems to be this: Who can best afford what?

That's the conclusion of Irving Bernstein, of the University of California's Institute of Industrial Relations, after analyzing 103 recent arbitration awards. He found that the arbitrator sided entirely with the union in only 11 cases—and with the employer in 16. The remaining 76 cases were compromises that were found to range from 25% to 75% of the demands.

Bernstein states in his new book, "Arbitration of Wages," (University of California Press), that only three factors appear to dominate an arbitrator's decision. These are:

1. Wage comparisons within the industry and with other industries.
2. Cost of living.
3. Employer's financial status.

Factors such as productivity, regularity of employment, strike records, and general economic considerations entered into only 3% of the cases analyzed.

Do Pickets at Common Site Make a Secondary Boycott?

In another split decision, NLRB has tightened the screws on picketing at a common construction site. Now, it says, such picketing is lawful only if it is "strictly" confined to the primary employer engaged in the dispute. Neutrals must be unequivocally disengaged.

Behind the decision was a dispute between the painters and an association of painting contractors in the Augusta (Ga.) and Aiken (S.C.) area. Because the signing of a contract had met with failure, the union tried to keep association members from doing business in the area by picketing construction jobs where an association member was doing the painting.

The mistake the union made was to give its pickets signs which read "This job is unfair . . ." Later the signs were changed to state the painting contractor in question "is unfair." But a majority of the board was unimpressed—they felt the change was not sufficient to knock out the initial impression that picketing applied to the entire job.

A minority of the board dismissed more lightly the complicated limitations on secondary boycotts and thought the majority had gone too far.

Carpenters Show Strength In Apprenticeship Record

Carpenters will remain the largest group of craftsmen in the entire construction industry—if the number of participants in their apprentice training programs is any criterion.

According to W. F. Patterson, director of the Labor Department's Bureau of Apprenticeship, more than 27% of all apprentices employed in the building trades at the present time are members of the carpentry trade—one of the first trades to adopt national apprenticeship standards for guidance of labor and contractors, in establishing apprentice training programs and joint committees.

He noted that more than 3,500 carpenter apprentices completed training last year. An additional 22,000 are still in training. Participating in the programs are approximately 19,000 contractors.

Two significant factors in the success of the programs, according to Patterson, are use of more effective pre-employment tests (measuring both manual and mental ability) and increased use of visual aids, especially

(*Continued on page* 115)

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It's this type of progressive thinking that has produced so many firsts—new ideas that have benefited the industry.

These are ideas, for example, like the introduction of cartoned tubing—introduced by Wolverine. Here was a new convenience that protected the tube, kept it clean and dry, made it easier to handle. This Wolverine innovation was so practical that it spread like wildfire through the entire industry.

There's no doubt about it. Wolverine is famous for the quality and the progressive thinking that is setting new standards in the tubing industry.

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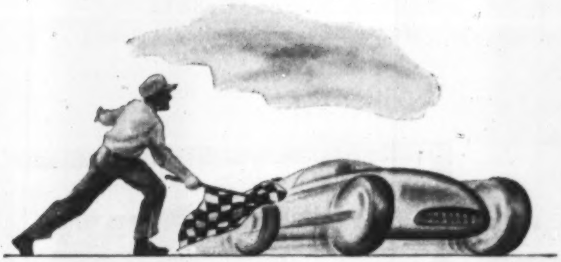

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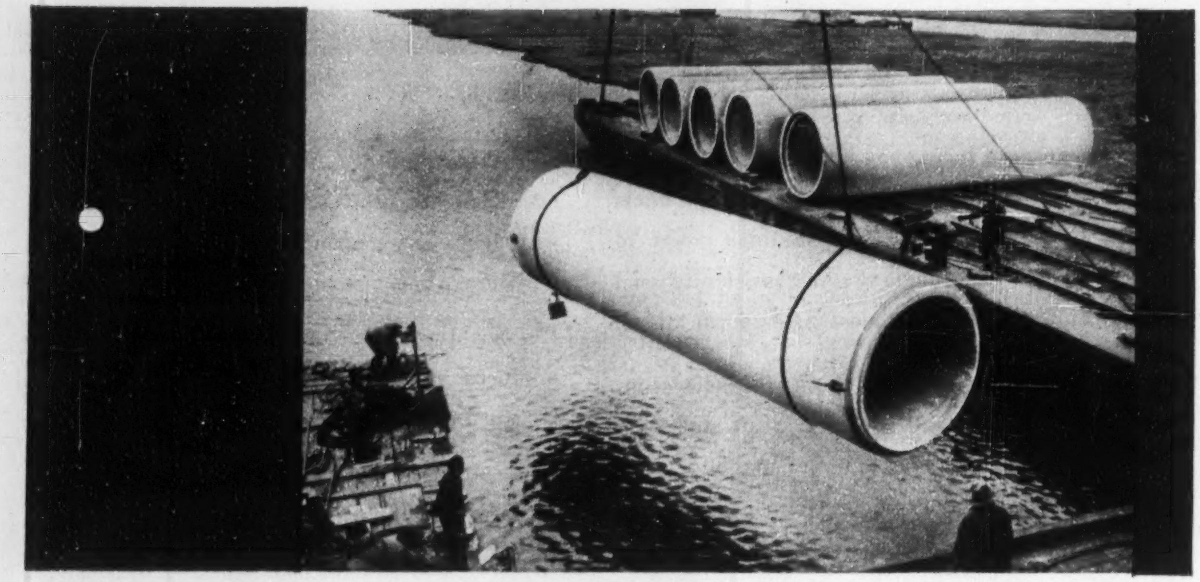
for efficient and easy subaqueous installation



Ideal for water intakes, sewer outfalls and river crossings, Lock Joint Reinforced Concrete Subaqueous Pipe provides the simplest, most effective method of joining pipe under water. The self-centering Rubber and Steel joint can be drawn together accurately and easily by merely taking up the nuts on two draw bolts of a special joint harness. Once the joint has been pulled "home," the compressed rubber gasket seals a permanent, watertight, flexible joint which requires no further bolting, caulking or welding.

Added advantages of Lock Joint pipe are the absence of tuberculation or corrosion, long life, permanent high carrying capacity and minimum maintenance costs. If your pressure pipe project requires pipe 16" in diameter or larger, you owe it to yourself to investigate the unexcelled characteristics offered by Lock Joint.

One of the leading producers of sewer and culvert pipe, Lock Joint Pipe Co. also manufactures pressure pipe for:

- TRANSMISSION MAINS
- INDUSTRIAL INSTALLATIONS (Supply, circulating and cooling systems)
- DISTRIBUTION MAINS
- WATER WORKS OPERATIONS (Pumping and treatment plant piping)
- SEWER WORKS OPERATIONS (Force mains and treatment plant piping)

LOCK JOINT PIPE COMPANY
Established 1905
P. O. Box 269, East Orange, N. J.
PRESSURE PIPE PLANTS: Wharton, N. J., Turner, Kan., Detroit, Mich., Columbia, S. C.
SEWER & CULVERT PIPE PLANTS:
Casper, Wyo. • Cheyenne, Wyo. • Denver, Col. • Kansas City, Mo. • Kennett Square, Pa. Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. • Wichita, Kan. • Kenilworth, N. J. Hartford, Conn. • North Haven, Conn. • Tucumcari, N. Mex. • Oklahoma City, Okla. • Tulsa, Okla. • Beloit, Wis. • Hato Rey, P. R. • Ponce, P. R. • Caracas, Venezuela • Wholly Owned Subsidiary, Great Lakes Pipe Co., Plants: Buffalo, N. Y. • W. Henrietta, N. Y.

LOCK JOINT
Reinforced Concrete
PRESSURE PIPE

motion pictures, in classroom work. He suggested careful consideration be given an applicant's financial ability to undertake training and noted this as an important factor in quittals (ENR Oct. 14, p. 28).

Labor Briefs . . .

• **Plattsburg dispute**—Arbitration of the upstate New York carpenters' dispute (ENR Nov. 25, p. 50) got off to a slow start on Dec. 1. After BTEA introduced some preliminary evidence, the hearing was adjourned to Dec. 17.

• **Joppa, Paducha disinterred**—Last week, the U. S. District Court in St. Louis selected the jury and started trial of Evan R. Dale and James Bateman, powerful southern Illinois labor leaders. Both are accused of violating the federal antiracketeering act during construction of atomic energy facilities at Joppa, Ill., and Paducah, Ky. (ENR Aug. 13, 1953, p. 21).

• **Why no raise?**—NLRB has ruled that an employer pleading financial inability as a reason for refusing to meet wage demands must, upon request, "attempt to substantiate his economic position by reasonable proof"—otherwise it will not be bargaining in good faith.

• **Labor Standards Board**—Philadelphia has set up a five-man Board of Labor Standards, representing the city, labor and industry, to serve in an advisory capacity in construction contract awards by the city.

• **Railway engineers**—A new union has come into being under the aegis of Engineers and Scientists of America with organization of Railway Technical Engineers—ESA. Formed by the engineering employes of Chicago and Northwestern Railroad, it will attempt to organize the estimated 10,000 civil, mechanical and electrical engineers now on U.S. railroad payrolls.

• **Atom strike ends**—The short-lived strike of 300 guards that halted construction of the atomic energy plant in Ohio's Pike County ended in a wage settlement with Peter Kiewit & Sons Co., prime contractor.

• **Workmen's compensation**—Tennessee's State Medical Assn. is drafting new legislation designed to knock out the ceiling on the amount of hospital and medical expenses payable under the present workmen's compensation law. A 1953 amendment put the ceiling at $1,500.

OFFICIAL PROPOSALS

Bids: December 21, 1954

New Jersey Turnpike Authority

CONTRACTS NOS. N-49A & N-49B

Proposals are invited for Contract Nos. N-49A & N-49B which, in connection with the Newark Bay-Hudson County Extension of the New Jersey Turnpike, involves the construction of water supply and sewerage systems and the construction of electrical distribution, street and perimeter lighting and fire alarm systems, respectively, and other incidental work on U. S. Government property at Caven Point Terminal, Jersey City, New Jersey.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock Eastern Standard Time on the morning of December 21, 1954, at which time and place said proposals will be publicly opened and read.

Bidders must submit with their proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after December 6, 1954, at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York. Contract documents will be furnished upon payment of Ten Dollars ($10.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman
December 3, 1954

Bids: January 6, 1955

New Jersey Turnpike Authority

CONTRACT NO. N-20

Proposals are invited for Contract No. N-20 which involves the fabrication and erection of superstructure steelwork for the Bayview Viaduct, extending from the Caven Point Road Interchange to Bayview Avenue, in Jersey City, Hudson County, New Jersey, in connection with the construction of the Newark Bay-Hudson County Extension of the New Jersey Turnpike.

The Principal items of work include:

Structural Steel	4,295,000 Lbs.
Furnishing Metal Railing	3,300 Lin. Ft.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 O'Clock Eastern Standard Time on the morning of January 6, 1955 at which time and place said proposals will be publicly opened and read.

Bidders must submit with their proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after December 8, 1954, at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, N. Y. Contract documents will be furnished upon payment of Fifteen Dollars ($15.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman
December 9, 1954

U. S. Government

Department of Commerce, Bureau of Public Roads, November 30, 1954. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., E.S.T., JANUARY 11, 1955, for Project 3B7C5D4, Shenandoah National Park, Albemarle and Augusta Counties, Virginia. 16.252 miles paving and other work from Big Flat Mountain to Jarman Gap. The approximate quantity of the principal item is 30,500 tons Type H-1 Asphalt Pavement, Liquefier Type. Minimum wage rates have been fixed as required by law. Plans, specifications, and proposal forms are available upon request at the address given above or Bureau of Public Roads, 920 South Jefferson Street, Roanoke, Virginia. H. J. Spelman, Division Engineer.

OFFICIAL PROPOSALS

Bids: January 5, 1955

The Hydro-Electric Power Commission of Ontario

ST. LAWRENCE POWER PROJECT
TENDERS FOR PROVISION
OF
CRUSHED ROCK OR CRUSHED GRAVEL
AND SAND

SEALED TENDERS, in quadruplicate, will be received by The Hydro-Electric Power Comission of Ontario up to 4:30 o'clock P.M. Eastern Standard Time on

Wednesday, January 5, 1955

for the provision of crushed rock or crushed **gravel and sand, to be used as concrete** aggregate in the construction of the Comission's St. Lawrence Power Project and associated work in the vicinity of Cornwall, Ontario. Details of optional conditions and quantities are shown in the Tendering Documents.

Copies of Tendering Documents may be obtained on and after December 1, 1954, at the office of the Director of Supply, The Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, on payment of $10.00 per set, no part of which will be refunded.

Tendering Documents may be inspected at the above location and at the offices of the following: **The Commission's Field Office**, Mille Roches, Ontario; Power Authority of the State of New York, 270 Broadway, New York 7, New York; and Uhl, Hall and Rich, 230 Congress Street, Boston 10, Massachusetts.

Each tender must be accompanied by a certified cheque for the sum of Fifty Thousand Dollars ($50,000.00). Provisions as to the return of the cheque appear in the tendering documents.

The successful **tenderer will be required** to furnish a performance bond, in the form approved by the Commission, and issued by a bonding company, licensed as such in the Province of Ontario and acceptable to the Commission, for One Hundred per cent (100%) of the total amount of the contract.

The lowest or any tender will not necessarily be accepted.

Robert H. Saunders, C.B.E., Q.C.,
Chairman, and **Members of**
The Hydro-Electric Power Commission
of Ontario,
620 University Avenue,
Toronto 2, Ontario.

Bids: January 6, 1955

Construction of Bridge

SEALED PROPOSALS will be received by the undersigned, acting for Lehigh County and the City of Allentown, at his office in the Lehigh County Court House Annex Bldg., Allentown, Pa., for the construction of a new bridge, with approaches, and Lawrence Street overpass, leading from South 15th Street to Wyoming Street, via Ward Street, Allentown, Pa., until 11:00 o'clock A.M. (E.S.T.) January 6, 1955 and publicly opened after 11:15 o'clock A.M. (E.S.T.) of the same day in the office of the County Commissioners.

Copies of plans, specifications and proposal forms may be obtained at the Office of G. Edwin Pidcock Co., Consulting Engineers, B. & B. Building 546-548 Hamilton St., Allentown, Pa., upon payment of Two Hundred Dollars ($200.00) for each set. Any Bidder, upon returning such set in good condition within ten (10) days after the opening of the proposals will be refunded One Hundred Fifty Dollars ($150.00) of his payment. If he submits no bid, only One Hundred Dollars ($100.00) of his payment will be refunded. Proposals may be submitted for any one, any two, or all three of the types of construction stated in the Proposal Forms provided.

Each Bidder must deposit with his proposal, a certified check or Surety Company's Bond in an amount of not less than five (5) percent of the base bid in the form as outlined in the "Instructions to Bidders".

Proposals must be sent in on regular forms prepared by the Consulting Engineers, in an envelope properly identified, and in the hands of the County Controller at or before the time above mentioned.

No Bidder may withdraw his proposal within fifteen (15) days after the actual date of the opening thereof.

The Board of Commissioners of Lehigh County, reserves the right to waive any informalities in, or to reject any or all proposals.

Alan F. Weinsheimer,
County Controller

(Continued on following page)

OFFICIAL PROPOSALS

(Continued from page 115)

Bids: December 23, 1954

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Public Buildings Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 23rd day of DECEMBER 1954, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, N. F. Ronan, District Engineer (Acting), 353 Broadway, Albany, N. Y.						
Albany Greene Schenectady	CT 54-6 MT 54-9	New York State Thruway–Catskill and Mohawk Sections 1, 2, 3, 3A, 5, 6, 7 and 8 (Ulster County Line to Montgomery County Line)		Furnish & Erect 408,000 L. F. Fence	$32,000 Plans $15	$597,000
DISTRICT No. 3, Wm Robinson, District Engineer, 301 E. Water Street, Syracuse, N. Y.						
Onondaga	FAC 54-16 FGSH 54-17	City of Syracuse: State Fair Boulevard Lake Onondaga West Shore Development, Northwest Arterial Connection (Cont. 1) Proj. U & UG991(4)	(0.39 Acc.) 1.30	Grading, Drainage & Sand Drains R. R. Sep. Comp. I-Beam 212′	$120,000 Plans $25	2,326,000
DISTRICT No. 5, C. R. Waters, District Engineer, 65 Court Street, Buffalo, N. Y.						
Erie	FA NTC 54-2	New York State Thruway–Niagara Section-Sub. N4 (Court St. to Main St.); Fuhrmann Blvd. Interchange Proj. U865(6)	(0.69 Acc.) 0.82	Two Crse. Cem. Conc. Pvt., 2 at 37 Var. Wide=0.155 Mi., Asp Conc. Ty. 2A (Access)=0.69 Mi.; 58 Span Cem. Conc. Paved Viaduct=0.665 Mi.	$420,000 Plans $100	7,639,000
DISTRICT No. 6, J. H. Thomas, District Engineer, 30 West Main Street, Hornell, N. Y.						
Chemung	FATC 54-4	Horseheads Village, FASH 53-5, 5162; Elmira-North Elmira Ext. FASH 54-16; Horseheads-Corning, SH 358 Elmira-North Elmira, SH 1378; Horseheads-Montour Falls, SH 5208; Elmira-Horseheads Connection, Pt. 2, FASH 54-15; Horseheads Village: South Main & Main Streets, SH 9228; Proj. No. U221(7); U479(12); U661(5)		Traffic Signal & Lighting System	$3,500 Plans $10	59,000
Steuben	FARC C54-106	City of Corning: Denison Parkway Extension F.A.C. 49-4 Proj. U225(9)	0.21	Storm Water Sewer	$2,400 Plans $10	41,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee Street, Watertown, N. Y.						
Franklin	FARC 54-107	Nicholville-Dickinson, Pt. 2, SH 9265 Dickinson-West Bangor, Pt. 2, SH 9076 Malone-Dickinson, Pt. 2, SH 1383 Proj. S 305(3)	0.99	Asp. Conc. Opt.=0.97 Mi. Misc. Work=0.02 Mi.	$11,000 Plans $15	205,000
DISTRICT No. 8, J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Ulster	CT 54-4	New York State Thruway–Catskill Section-Subs. 1 & 2 (Kingston-Saugerties-Greene Co. Line)	9.77	Furnish & Install 51,600 Fencing	$4,500 Plans $10	79,000
Westchester	FA NETC 54-10 FA NET 54-11	New York State Thruway–New England Section, Sub. 4 (Mamaroneck Av.-Central Av.)Proj. F and FI-1068(8)	(2.37 Acc.) 2.84	9 Cem. Conc. Pavt., 2 at 37′ Var. Wide=4.20 Mi. Asp. Conc., Opt.=0.82 Mi. Misc. Work=0.19 Mi. 7 Hy. Seps. Comp. I-Beams, 169′, 172′, 172.2′, 107.7′ 114′, 62′ & 119.2′; 2 Brs. Reinf. Conc. Slabs 56.8′ & 36′; 1 R.R. Sep. Comp. I-Beam, 152′	$350,000 Plans $100	6,485,000
DISTRICT No. 9, F. W. Donovan, District Engineer, 71 Frederick St., Binghamton, N. Y.						
Broome	FARC C54-108 FAC 54-17	Binghamton City: Vestal Ave. Bypass, FAC 49-8 Binghamton City: Court St.-Rte 17 Connection Susquehanna River Bridge Project U1019(4)	(2.28 Acc.) 0.91	Asp. Conc. Type 2A=0.91 Mi. Asp. Conc. Type 2A (Access)=2.17 Mi. Asp. Conc. Opt. (Access)=0.11 Mi. Br. 5 Span Deck Girder 642′ Hy. Sep. Comp. I-Beam 165.4′	$250,000 Plans $50	4,460,000
Delaware	54 BWS 3, 3D, 10, 10A, 10AT	New York City Board of Water Supply (Pepacton Reservoir) Rds. 3, 3D, 10, 10A and 10AT	7.34	Bit. Mac. Ty. 1 (Pen. Meth.)=7.30 Mi. Found. Course Gravel=0.04 Mi. 2 Box Brs. 33.8′ and 20.5′	$91,000 Plans $25	1,658,000
Sullivan	RC 54-102	Narrowsburg-Callicoon, Pt. 3, S.H. 8449 Callicoon-Long Eddy, Pt. 2, S.H. 8494	0.32	Repair, Clean & Paint 2 Bridges	$1,700 Plans $10	31,000
DISTRICT No. 10, M. E. Goul, District Engineer, Montauk Highway at Little E. Neck Rd., Babylon, L. I., N. Y.						
Bronx	FA NETC 54-13P	New York State Thruway–New England Section Sub. 6 (Cont. 2) Proj. UI-1068(9)	(6.58 2.90	9″ Cem. Conc. Pavt. Var. Wide=5.38 Mi. Asp. Conc. Opt.=2.13 Mi. Sheet Asp. Pavt.=1.96 Mi. Misc. and Electrical Work=0.01 Mi.	$215,000 Plans $50	3,904,000
Queens	FA HHE 54-1	Horace Harding Expressway, Sect. II (Cont. No. 3A) Proj. U862(5)	(0.40 Acc.) 0.53	Grad., Drain. & Misc. Work=0.53 Mi. Cem. Conc. Pavt. (Access)=0.23 Mi.; Asp. Conc. Opt. (Access)=0.17 Mi. Hy. Sep. Comp. I-Beam 242′	$144,000 Plans $100	2,626,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: December 16, 1954

Joint Meeting, City Hall, East Orange, N. J. New Joint Trunk Sewer—Section VI

Sealed proposals for the construction of a new Joint Trunk Sewer, Section VI will be received for the following municipalities:

The City of East Orange, Township of Hillside, Town of Irvington, Township of Maplewood, Township of Millburn, City of Newark, Borough of Roselle Park, Village of South Orange, City of Summit, Township of Union, and Town of West Orange, New Jersey, organized in Joint Meeting under the provision of an Act entitled,

"An Act to authorize two or more municipalities in this state to jointly construct and maintain outlet or trunk sewers" approved March 15, 1899, and the supplements and amendments thereto, hereinafter referred to as the Joint Metting.

Said proposals will be received in the Council Chamber, City Hall, East Orange, New Jersey, at four o'clock P.M. (4:00 P.M.) Eastern Standard Time on Thursday, December 16, 1954 and at that time and place will be publicly opened and read aloud. The proposals shall be in accordance with the specifications, plans, terms of the proposed contract, and form of bond on file with the Joint Meeting.

The contract involves construction of a trunk sewer complete with appurtenances approximately 10,000 feet in length and 42 inches to 24 inches in diameter along a route located in the Township of Millburn, N. J. No bids will be received unless made in writing on forms furnished, and unless accompanied by a certified check made payable to the Treasurer of the Joint Meeting for an amount not less than ten per cent (10%) of the amount of the bid.

Bidders shall enclose as part of their sealed proposal a statement of commitment by a corporate surety company authorized to do business in New Jersey that such company will underwrite and issue to the Joint Meeting a performance bond in statutory form in behalf of the contractor.

Bidders will be required to file with their bid a standard form of questionnaire and financial statement containing a complete statement of the bidder's ability, available equipment, financial standing and experience in performing work of the type contemplated.

The Joint Meeting reserves the right to reject any or all bids, and to accept that one which, in its judgment, best serves the interests of the contracting municipalities.

Plans and specifications may be seen at the office of Edward P. Decher, Secretary of the Joint Meeting, City Hall, Newark, New Jersey. They may be seen or obtained at the office of the Consulting Engineer, Elson T. Killam, 529 Millburn Ave., Millburn, N. J.; upon payment of $15.00 for each set. The deposit will be returned only to Contractors submitting bona fide proposals who return the plans and specifications in good condition within ten (10) days after opening of bids.

By Order of the Joint Meeting.
Milo S. Borden
Chairman
Edward P. Decher
Secretary

Elson T. Killam
Consulting Engineer

OFFICIAL PROPOSALS

Bids: December 20, 1954

Charleston, W. Va.

SECTION ONE: UNIT ONE
KANAWHA EAST INTERCEPTORS,
CAPITOL STREET TO ELK RIVER
CHARLESTON, W. VA.

The Sanitary Board of the City of Charleston, Charleston, West Virginia, will receive sealed bids for "Kanawha East Interceptors, Capitol Street to Elk River", until 2 P.M. Eastern Standard Time on the 20th day of December, 1954, at the office of the Sanitary Board, Room 15, City Building, at which time and place all bids will be publicly opened and read aloud.

The successful bidder will be required to furnish a satisfactory performance bond in the amount of 100 per cent of contract.

Liquidated damages for delay will be One Hundred Dollars ($100.00) per day for each calendar day beyond the date specified in the contract.

The contract documents, including plans and specifications are on file at the office of the Sanitary Board, City Building, Charleston, West Virginia, and at the office of Settle Engineers, Inc., 2nd Floor Peoples Building, Charleston, West Virginia, where they may be examined free of charge.

Copies of the documents may be obtained by depositing Forty Dollars ($40.00) with Settle Engineers, Inc., 2nd Floor Peoples Building, Charleston, West Virginia, for each set of documents so obtained. The amount of the deposit for one (1) set of documents will be refunded to each actual bidder who returns the plans and documents in good condition within five (5) days after the opening of bids.

The Sanitary Board of The City of Charleston reserves the right to reject any or all bids and to waive any informalities in bidding.

A certified check or cashier's check, payable to The Sanitary Board of The City of Charleston, West Virginia, or a satisfactory bid bond executed by the bidder and a surety company authorized to do business in West Virginia, in an amount of dollars at least equal to five per cent (5%) of the bid or an equal amount of U. S. Government Bonds, shall be submitted with each bid.

No bid may be withdrawn, after the scheduled closing time for receipt of bids, for at least sixty (60) days thereafter.

THE SANITARY BOARD OF THE
CITY OF CHARLESTON
By: Donald C. Shonk
Secretary

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4306) will be received at Superior, Nebraska, until January 18, 1955, for furnishing labor and materials for earthwork and structures, Franklin Canal, Station 2178/20 to End, and Franklin Laterals, Second Section. Location: vicinity of Red Cloud, Nebraska, in Franklin and Webster counties. Principal items are: excavation, 400,000 cu. yds; concrete, 1,140 cu. yds; furnishing and laying 1,275 lin. ft. (18 inch to 36 inch diameter) concrete culvert pipe; furnishing and laying 14,200 lin. ft. (18 inch to 30 inch diameter) concrete pressure pipe; and other work. The work is divided into 2 schedules. Completion time 430 days. For particulars, address Bureau of Reclamation, Superior, Nebraska; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4302) will be received at Sargent, Nebraska, until January 6, 1955, for furnishing labor and materials for Gavins Point-Belden, 115-kilovolt Transmission Line, Transmission Division. Nebraska, Missouri River Basin Project. Location: Gavins Point Switchyard (proposed) to Belden Substation, near Belden, Nebraska in Cedar County. Principal items are: 286 structures furnishing and construction various H-frame, wood pole structures; 250 X-Braces furnishing, assembling, and attaching X-Braces; 867 assemblies Furnishing additional hardware, assembling, and attaching insulator assemblies; 32.5 miles of line furnishing and stringing three 556,500 circular mil ACSR conductors; 32.5 miles of line furnishing and stringing two 3/8 inch, galvanized steel overhead ground wires; and other work. Completion time 180 days. For particulars, address Bureau of Reclamation, Sargent, Nebraska; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: December 21, 1954

Fairfax County, Virginia Integrated Sewerage System

Sealed bids will be received by the Board of County Supervisors of Fairfax County, Virginia, at the Office of the Sanitary Engineer, County of Fairfax, Virginia, until Tuesday, December 21, 1954, at 2:00 o'clock, P.M., Eastern Standard Time, for the construction of:

CONTRACT NO. 35: Approximately 45,700 lineal feet of 8 to 30 inch sanitary sewers and appurtenances.

Promptly thereafter they will be publicly opened and read in the Board of County Supervisors Room, County Office Building, Fairfax, Virginia.

Plans, specifications, and contract documents may be examined and copies thereof may be obtained at the Office of the Sanitary Engineer, upon payment of Ten Dollars ($10.00) per set, which amount shall not be returnable.

All bids must be on separate form furnished by the County.

Contractors, whether resident or nonresident in Virginia, will be required to show evidence of a Certificate of Registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more.

Each bid must be accompanied by cash, or by the certified check of the bidder, made payable to the Director of Finance, County of Fairfax, Virginia, or by an accecptable bidder's bond in an amount of not less than Five Percentum (5%) of the amount of the total bid. The successful bidder will be required to furnish a performance and maintenance bond in a penal sum equal to the full contract price.

No bid may be withdrawn for a period of thirty (30) days after the actual opening thereof and the right is reserved to waive any informality therein and to reject any or all bids.

COUNTY OF FAIRFAX, VIRGINIA
By: Harry L. Hale
Sanitary Engineer

Dated: Dec. 1, 1954

Bids: December 23, 1954

Construction of Sanitary Sewers

CONSTRUCTION OF SANITARY SEWERS
IN SOUTHWEST SECTION
CITY OF POUGHKEEPSIE,
DUTCHESS COUNTY, NEW YORK

Sealed bids for construction of sanitary sewers in the Southwest Section of the City of Poughkeepsie will be received by the Commissioner of Finance, City Hall, Poughkeepsie, New York until 10:00 A.M., Eastern Standard Time, Thursday, December 23, 1954, and there at said office and at said time will be publicly opened and read aloud.

This Contract includes the construction of approximately 425 linear feet of 10-inch sewer and approximately 20,000 linear feet of 8-inch sewer and appurtenances, together with a small sewage lift station and approximately 900 linear feet of 4-inch cast iron force main.

Plans and Documents may be examined at no expense at the office of the Commissioner of Finance, City Hall, Poughkeepsie, New York, and copies of the same obtained there upon payment of $10.00 for each set. Any bidder upon returning said set in good condition within thirty (30) days of the date of receiving bids will be refunded his payment, and any non-bidder upon so receiving said set will be refunded $5.00.

The Plans and Documents may be examined in the office of the Superintendent of Public Works, Eastman Park, Poughkeepsie, New York, or at the office of O'Brien & Gere, Consulting Engineers, 204 East Jefferson Street, Syracuse 2, New York.

Each bid must be accompanied by security in amount not less than five per centum (5%) of the amount of the bid in the form and subject to the conditions provided in the Information for Bidders contained in the Contract Documents.

The right is reserved to waive any informalities in the bids and to reject any or all bids.

DEPARTMENT OF FINANCE OF THE
CITY OF POUGHKEEPSIE
By: AUBREY B. COONS
Commissioner of Finance

Dated: December 2, 1954

Bids: December 30, 1954

Fairfax County, Virginia Integrated Sewerage System

Sealed bids will be received by the Board of County Supervisors of Fairfax County, Virginia, at the Office of the Sanitary Engineer, County of Fairfax, Fairfax, Virginia, until Thursday, December 30, 1954, at 2:00 o'clock, P.M., Eastern Standard Time, for the construction of:

CONTRACT NO. 36: Approximately 55,000 lineal feet of 8 to 16 inch sanitary sewers and appurtenances.

Promptly thereafter they will be publicly opened and read in the Board of County Supervisors Room, County Office Building, Fairfax, Virginia.

Plans, specifications, and contract documents may be examined and copies thereof may be obtanied at the Office of the Sanitary Engineer, upon payment of Ten Dollars ($10.00) per set, which amount shall not be returnable.

All bids must be on separate form furnished by the County.

Contractors, whether resident or nonresident in Virginia, will be required to show evidence of a Certificate of Registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more.

Each bid must be accompanied by cash, or by the certified check of the bidder, made payable to the Director of Finance, County of Fairfax, Virginia, or by an acceptable bidder's bond in an amount not less than Five Percentum (5%) of the amount of the total bid. The successful bidder will be required to furnish a performance and maintenance bond in a penal sum equal to the full contract price.

No bid may be withdrawn for a period of thirty (30) days after the actual opening thereof and the right is reserved to waive any informality therein and to reject any or all bids.

COUNTY OF FAIRFAX, VIRGINIA
By: Harry L. Hale
Sanitary Engineer

Dated: December 9, 1954

Bids: December 30, 1954

New Jersey Turnpike Authority

CONTRACT NO. N-27A

Proposals are invited for Contract No. N-27A which involves the fabrication and erection of the superstructure steelwork for a portion of the North Terminal Ramps, extending from Pier 27 of the West Viaduct at Second Street to Pier SB 25 on the Southbound Ramp and Pier NB 24 on the Northbound Ramp, both at Tenth Street, and other incidental work, in Jersey City, Hudson County, New Jersey, all in connection with the construction of the Newark Bay-Hudson County Extension of the New Jersey Turnpike.

The principal items of work include:

Structural Steel	6,815,000 Lbs.
Furnishing Metal Railing	7,900 Lin. Ft.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 O'Clock Eastern Standard Time on the morning of December 30, 1954 at which time and place said proposals will be publicly opened and read.

Bidders must submit with their proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after December 3, 1954, at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York. Contract documents will be furnished upon payment of Fifteen Dollars ($15.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

December 2, 1954

OFFICIAL PROPOSAL

RATE: $1.80 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

OFFICIAL PROPOSALS

Bids: January 6, 1955

Infirmary Building Willowbrook State School Staten Island, N. Y.

NOTICE TO BIDDERS

Separate sealed proposals covering Construction, Heating, Sanitary, Electric and Refrigeration Work for Infirmary Building, (Building No. 10), Willowbrook State School, Staten Island, N. Y., in accordance with Specifications Nos. 18211, 18212, 18213, 18214 and 18216 and accompanying drawings, will be received by Henry A. Cohen, Director, Bureau of Contracts and Accounts, Department of Public Works, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., on behalf of the Department of Mental Hygiene, until 2:00 o'clock P.M., Eastern Standard Time, on Thursday, January 6, 1955, when they will be publicly opened and read.

Each proposal must be made upon the form and submitted in the envelope provided therefor and shall be accompanied by a certified check made payable to the State of New York, Commissioner of Taxation and Finance, of 5% of the amount of the bid as a guaranty that the bidder will enter into the contract if it be awarded to him. The specification number must be written on the front of the envelope. The blank spaces in the proposal must be filled in, and no change shall be made in the phraseology of the proposal. Proposals that carry any omissions, erasures, alterations or additions may be rejected as informal. The State reserves the right to reject any or all bids. Successful bidders will be required to give a bond conditioned for the faithful performance of the contract in the sum of 100% of the amount of the contract, and a separate bond for the payment of laborers and materialmen as follows: on contracts not more than $500,000.00, 100% of the amount of the contract: on a contract in excess of $500,000.00, the bond shall be in the amount of $500,000.00. Drawings and specifications may be examined free of charge at the following offices:

State Architect, 270 Broadway, New York City
State Architect, The Gov. A. E. Smith State Office Bldg., Albany, N. Y.
District Engineer, 109 N. Genesee St., Utica, N. Y.
District Engineer, 301 E. Water St., Syracuse, N. Y.
District Engineer, Barge Canal Terminal, Rochester, N. Y.
District Engineer, 65 Court St., Buffalo, N. Y.
District Engineer, 30 West Main St., Hornell, N. Y.
District Engineer, 444 Van Duzee St., Watertown, N. Y.
District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.
District Engineer, 71 Frederick St., Binghamton, N. Y.
N. Y.
District Engineer, Babylon, Long Island, N. Y.
Willowbrook State School, Staten Island, N. Y.

Drawings and specifications may be obtained by calling at the Bureau of Contracts and Accounts, Department of Public Works, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., or at the State Architect's Office, 18th Floor, 270 Broadway, New York City, and by making a deposit for each set as follows: Construction, $40.00; Heating, $20.00; Sanitary, $15.00; Electric, $10.00; Refrigeration, $5.00; or by mailing such deposit to the Albany address. Checks should be made payable to the State Department of Public Works. Proposal blanks and envelopes will be furnished without charge.

DATED: 11/18/54
MFM/N

U. S. Government

Department of Commerce, Bureau of Public Roads, November 18, 1954. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., E.S.T., DECEMBER 21, 1954, for Project 1D5-1E1, Colonial Parkway, James City County, Virginia. Length: 1.936 miles. The approximate quantities of the more important items are: 1,680,000 cu. yd. Hydraulic Embankments, 18,000 lin. ft. Untreated Timber Piling, 36,600 sq. ft. Untreated Timber Sheet Piling and 34,000 sq. ft. Treated Timber Sheet Piling. Minimum wage rates have been fixed as required by law. Plans, specifications, and proposal forms are available upon request at the address given above or Bureau of Public Roads, 920 South Jefferson Street, Roanoke, Virginia. H. J. Spelman, Division Engineer.

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT: "OPPORTUNITIES" :EQUIPMENT
BUSINESS: :USED OR RESALE

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$1.80 a Line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.

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Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.

Replies are forwarded each day as received at each of the offices mentioned without additional charge.

EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

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The advertising rate $20.50 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.

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SEND NEW ADVERTISEMENTS to N. Y. office, 330 W. 42nd St., N. Y. 36, for December 23rd issue, closing December 13th.

YOUNG AGGRESSIVE SALES ENGINEER

With concrete pipe manufacturing background. This is an excellent opportunity for top-notch man possessing engineering experience and sales ability. Must have the technical knowledge to negotiate with consulting engineers and sell them on the use of a proven product. Territory is the South and Southeast. Reply fully, giving age, experience, education and salary requirements, to

P-4737, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SALES ENGINEER TRAINEES

Men, if you have civil or architectural engineering degrees or equivalent training and experience in building construction, here is a stimulating challenge to utilize this knowledge in a sales capacity. Because we are expanding our MILCOR line of engineered metal products for the building industry, there are additional openings for qualified candidates in our sales training program. Excellent outlook for advancement. Salary open.

INLAND STEEL PRODUCTS COMPANY
4101 West Burnham St.
Milwaukee 1, Wisc.

GENERAL MANAGER

for small, conservative corporation operating throughout the Southeast in the production of concrete pipe and sand and gravel. Must be capable of assuming full responsibility. Reply fully, giving age, experience, education and salary requirements to

P-4738, Engineering News-Record
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CIVIL ENGINEERS

Junior positions in California's huge highway program. High level professional experience with excellent promotional opportunities offered to recent college graduates in civil engineering. $376 to start with raise after six months. Positions open at this level only. Write Section E, State Personnel Board, 1015 L Street, Sacramento 14, Calif.

NEW BUSINESS ENGINEER

Established engineering-construction management firm has opportunity for Engineer who has successful background in selling services for design of industrial chemical plants, public works, architectural. Write fully giving details of past similar selling.

P-4618, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

CONSTRUCTION SUPT.

For General Contractor

Must be familiar with concrete construction, brickwork, etc. and capable of coordinating subcontractors work. State experience, when available and salary requirements.

P-4223, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

WANTED

STRUCTURAL ENGINEER

With 5-10 years experience in steel and concrete design to work on design of pulp mill construction. Permanent position. Write: R. J. Kutchera, Chief Engineer

RAYONIER INCORPORATED
Hoquiam, Washington

SALES REPRESENTATIVE WANTED

TO RENT & SELL STEEL SHEET PILING IN ME., N.H., VT., MD., N.C., S.C., GA., NO. FLA., VA., ALA., TENN., KY.

R. C. STANHOPE, INC., 60 E. 42nd, N.Y. 17, N.Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

BRIDGE—HIGHWAY Engineers—Designers—Draftsmen. For work on bridges, expressways and turnpikes. Location Midwest. Permanent positions with periodic promotions depending on experience and ability. Paid vacations, sick leave, hospitalization and life insurance. Include education, experience, reference and salary expected in application letter. P-4280, Engineering News-Record.

CHIEF ENGINEER with substantial process experience in petroleum and chemicals for Chicago based contractor. Furnish qualifications, experience, salary, availability, etc. P-4724, Engineering News-Record.

WANTED: YOUNG engineer to do design and layout work for precast products plant in Central Pa., now entering prestress to keep abreast of present day precast and prestress designs. P-4707, Engineering News-Record.

WANTED STRUCTURAL Engineer — Three years experience in structural steel design and detailing required. Mechanical Engineer—must be experienced in design for all mechanical trades. Experience with Indiana and Ohio codes desirable. Architectural Draftsmen and Detailers—A real opportunity for qualified men with one of the Mid-West's fastest growing designing and engineering firms. Call or write Auferoth & Fanning, Celina, Ohio.

REGISTERED CIVIL Engineer (Michigan) for municipal engineering office. Desire a young man with a general background. Work primarily in street and sewer design. Future bright for capable man. State experience, availability and salary requirements. Write to Civil Service Office, City Hall, Dearborn.

CONCRETE PIPE Plant Superintendent with pressure and prestressed pipe experience capable of operating a large modern concrete pipe plant located in the South. Excellent opportunity for a top level production manager. Write fully, giving age, past experienec, education, availability, salary requirements to P-4778, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

SALES TRAINEE—Nationally-known company engaged in the manufacture and distribution of fabricated metal products has opening in New York City office for sales trainee with civil engineering degree. SW-4692, Engineering News-Record.

(Continued on following page)

EMPLOYMENT AGENCIES

WANTED ENGINEERS, Designers, Draftsmen-Structural, Architectural, M. E., C.E., E.E., and Ind., also Teachers and Chemists, Cleveland Engineering Agency, 2132 E. 9, Cleveland.

POSITIONS WANTED

SUPERINTENDENT — 25 YEARS experience, desires steady employment. Thorough knowledge of heavy excavation projects. Work consisting of Road grading, and drainage, super-highways, railroad, earthfill dams, tunnels, mine stripping both coal and iron ore, iron ore mining including crushing, grading, sampling and shipping, and large solid rock excavations. Supervision and maintenance of all types construction equipment, estimating. Available now will go anywhere. A-1 references. PW-4552, Engineering News-Record.

SUPERINTENDENT OR General Foreman — Age 42 — Over 20 years heavy construction experience. Excavation grading, drainage and paving. Know men, methods, equipment & cost. Have following competent foremen. Available December 10th. PW-4575, Engineering News-Record.

OFFICE MANAGER Capable of assuming full responsibility for operation of contractor's office. Fourteen years experience in Government and private contracts. PW-4659, Engineering News-Record.

CONSTRUCTION MANAGER, Superintendent 51 yrs. C. E. Twenty five yrs. experience in charge for contractors. Capable and experienced in the estimating, planning, and all phases construction of dams, power houses, bridges marine and subaqueous works. PW-4628, Engineering News-Record.

ELECTRICAL STAFF Engineer & Draftsman over 10 years industrial experience in power wiring, lighting layouts, automatic control wiring, estimating and supervision of electrical installations. Married, age 33, desires responsible position with future. PW-4740, Engineering News-Record.

CONSTRUCTION EXECUTIVE and Superintendent now in the midwest desires permanent location in the Pacific Northwest with contractor engaged in Industrial, Commercial, Municipal, or heavy construction. All replies answered. Address PW-4743, Engineering News-Record, 520 North Michigan Ave., Chicago, Illinois.

SALESMAN AVAILABLE for N. Y., N. J., Pa. area. Know building materials and equipment and their uses. Have sold to contractors and industrial plants. Wish to locate with materials or equipment manufacturer. PW-4654, Engineering News-Record.

WANTED GROWING contractor seeking an ambitious capable assistant—varied field and office experience B.C.E. Reg N.Y.S. Age 28. PW-4803, Engineering News-Record.

WANTED

WANTED TO BUY
4000' 15 or 16" CONCRETE FORMS

WILLIAMS CONSTRUCTION CO.
Box 145 Baltimore 20, Md.

WANTED

Symons 3 ft. standard cone crusher with extra coarse bowl. Also—2 cy. Sauerman slack line cableway excavator 70 ft. mast.

P. O. Box 314, Chester, New York

Wanted to Buy

USED DRIER

For asphalt plant, size 5' x 20'

GENERAL CONSTRUCTION CO.
(Alberta) Ltd.
Lethbridge, Alberta, Canada

POSITIONS WANTED

CIVIL ENGINEER MSCE 31 8 years design and construction experience. PW-4792, Engineering News-Record.

CHIEF ESTIMATOR, thoroughly experienced all phases construction industry including buying sub contracts, materials, managing field to produce good costs and soliciting new business. PW-4764, Engineering News-Record.

CONSTRUCTION ENGINEER—Graduate C.E. desires position as field or office engineer, U.S.A. or foreign. 25 years experience large building, housing projects and heavy construction. Fluent Spanish. PW-4763, Engineering News-Record.

CONTROLLER — ADMINISTRATIVE Ass't — Business Mgr. 12 yrs. construction experience —executive capacity. Specialist Gov't Contracts —excellent references. Available 30 days, possibly sooner if required. Age under 50 yrs.—health good—will relocate. PW-4787, Engineering News-Record.

CONSTRUCTION EXECUTIVE, available as project manager, on large operation, chief estimator for large organization or in other executive position where scope warrants employment of top man, thoroughly experienced on all types of construction and in every phase of general contracting. PW-4807, Engineering News-Record.

PART TIME WORK WANTED

ENGINEER—18 YRS. Experience desires Part Time Work designing, drafting or planning. Steel or concrete oil refineries, power and industrial plants, bridges, etc. PTWW-4553, Engineering News-Record.

SELLING OPPORTUNITY WANTED

GRADUATE CIVIL Engineer, 18 years experience now selling to heavy construction field and consulting engineers in Maryland, Dist. of Columbia, Virginia. Wants lines in field of heavy construction on straight commission basis. Through contacts can guarantee quick results in promotion of sales. SW-4761, Engineering News-Record.

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An Eastern Representative with 25 years of specialized sales experience will establish and handle distributor relations or talk directly with your customers. If you want to build up your sales volume or strengthen your distributor organization along the Eastern seaboard write to

RA-4797, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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New Book

ESTIMATING PRODUCTION AND CONSTRUCTION COSTS

Never Goes Out of Date

Estimate general construction costs. More Accurate. Write for 10 day free exam. $15 postpaid from:

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STRUCTURAL STEEL SALES PROMOTION

To meet requirements of an expanded program several engineers are needed immediately for technical and promotional work with customers of the structural steel fabricating industry. These are permanent positions with a national trade and technical organization.

Positions are in field offices in central and midwestern states. Some travel required. Excellent opportunities for advancement and for showing initiative and judgment.

Applicants should have B.S. in Civil Engineering, preferably with a major in structural. Experience in design and construction in structural steel, and promotional contact with architects, engineers and contractors desirable.

Field engineers—Under 30 years old
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Send complete resume, recent photograph if available and salary requirements by mail to:

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Complete Building Estimators Course, also Building Labor Calculator for practicing estimators. Thirty-fourth year serving the building industry. For free trial and all particulars write:

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Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.

GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
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OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board [illegible] Forty-third year [illegible]

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SHOVELS — BACKHOES — CRANES

1—Link-Belt Model LS-80, ¾-yard crawler backhoe-clamshell combination with General Motors 4-cylinder diesel engine	$4800.00
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Will consider Allis-Chalmers Tractors or Scrapers offered in trade.

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1—Johnson 150 cubic yard Concrete Plant, 3 aggregate and 1 cement compartment, 2 cubic yard aggregate and cement weight batchers, 520 barrel auxiliary cement bin with truck hopper, elevator and screw conveyor. Outfit has aggregate truck hopper and bucket elevator. Plant includes 2 each of Ransome 28S Mixers.

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★ **CAT D8 DOZER**
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Write or Call (MA 6-1860)
For Your Needs

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620 South 25 Ave., Bellwood, Ill.

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Cleveland 95 S/N 3195, Model 95 S/N 2661; Buckeye C-15 S/N 3280, Buckeye 160 S/N 3887, Buckeye 410 S/N 4226, Buckeye 401 S/N 43; P&H 1030 S/N 2163; Pioneer Model 170 S/N 6033 dies I; Longhorn S/N CX-1040; Parsons 25 S/N 1495.

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1—P & H Model 855 Crawler Shovel, 2 yd. capacity. Cat Diesel power. Reconditioned. Crane boom available.

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1—Bay City Model 20, ⅝ yd. Crawler Shovel or Hoe, gas power. Rebuilt.

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1—Lorain Moto Crane Model MC-4 on factory carrier — 11:00 x 20 tires. Gas power. In excellent operating condition.

1—Bay City Model 20, ⅝ yd. Crane on Mack Chassis. 40 ft. Crane Boom.

1—Allis Chalmers HD 14 Tractor with Baker Hydraulic Blade.

1—Caterpillar D-8 Tractor I-H Series DD-PCU.

Clamshell Buckets, ⅝ to 2 cu. yd., also several Crane Booms — Trench Hoes and Shovel Attachments — Assorted makes.

Quickway Model E—Hoe & Shovel attachments.

LeTourneau Model "C" Tournadozer.

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KOEHRING, 605, 1½ Cu. Yd., 36 ton, Clamshell, dragline, hoe, D-1300A Cat. Diesel, 75 ft. boom, power lowering-suspension stop. Retractable A frame, long and wide mountings, excellent condition, new 1952, "A Ditch Digger's Dream," $38,000.00.

JAEGER, 210 Air Compressor, gasoline, 4 pneumatic wheels, excellent condition, bargain, $2,500.00.

WANTED

AIR COMPRESSOR, 250 or 365, diesel power, should be late model with little use.

COLUMBIA CONSTRUCTION CO., INC.
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MANITOWOC CRANES

Models 2000-B or 3500—25 T. to 60 Ton Capacity—50' to 125' booms—20' or 30' jibs—manual controls — independent booms —torque converters.

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LOCOMOTIVES

Diesel electric

25 - 44 - 45 - 65 - 70 tons

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FOR SALE

Caterpillar Pull Grader Model 66

Never used Army surplus. No rust. 12 ft blade needs D8 or equal tractor for power. Has self-powered controls. Perfect machine for bank sloping or pioneer road building. Cost $5000.00, asking $1000.00, FOB Cranford, New Jersey.

EDWARD E. BAHR
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International Bulldozer TD14A

Excellent Condition, 2½ Yrs. Old

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60 cu. ft. Electric Driven, with 70 ft. Elec. Tower and Cone shaped steel storage bunker. Catenary suspension for truck or car loading. Complete. Located Albany, N. Y.

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Caterpillar D7 Cable bulldozer (rebuilt)
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48B Bucyrus Erie Shovel 2 cy diesel
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Shovel Front for Model 25 N.W.
6 wheel Mack Tractor 40 ton Rogers Low Boy

WILLIAMS CONSTRUCTION COMPANY
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---

50 ton *SCREW JACKS*—NEW

12 ea. BUDA #5010 Journal Jacks
28 ea. DUFF-NORTON #5027 (27" high—with foot lift; 13½" rise)
2000—Turnbuckles ¾"x12" eye & eye-forged—Chicago Hdwe. $1.10 ea. for the lot
Steam Hose—1000'—150 & 200 lb. pressure. 1" I.D. New—Closeout

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2—Baker Heavy Duty 9 ft. blades—Bumper type mounting with monarch 12 v. electric-hydraulic controls — New 2 years ago, never used. Paid $1350.00 for pair will sacrifice for first $800.00.

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GRegory 3-0318

SAVE EITHER WAY with ECA REBUILT EQUIPMENT

Rent it or BUY IT!

Partial list only

If what you need isn't listed, just contact our nearest plant. We'll gladly quote on your requirements.

CRANES, CRAWLER

Mdl. 304 Koehring, ¾ yd., #C5934, 35-50' boom, w/jib & backhoe, wt. 20 ton.

Mdl. 255A P&H #8243, 30-40' boom, Chrysler gas eng., cap. 8½ ton @ 12'.

Mdl. 501 Koehring #1071, 1¼ yd., Mdl. K Wisc. gas. eng., 60-80' boom, 18' jib cap., 20 ton @ 12'.

Mdl. 77 Lorain, 1½ yd., Diesel Crawler Crane, Ser. 9163, 45-85' boom, 20' jib. wt. 40 ton.

Mdl. 78 Lorain, 1½ yd. Diesel Crane, up to 100' boom, 15' jib, w/fairleads for drag work, hi gantry. Contact Chicago plant for new low price.

655-A P&H, 1½ yd., Diesel Crane, Ser. 6246, Cat. D-13000 eng., hi gantry, 80' boom.

CRANES, LOCOMOTIVE

30 ton Mdl. F OHIO #3266, 50' boom, oil fired, 200# boiler, beautiful shape.

DERRICKS, GUY & STIFFLEG

20 ton American Terry Steel Erectors Guy Derrick, 110' mast, 100' boom.

25 ton Wiley Mdl. E Steel Stiffleg, cap. 25 ton with 60' boom.

30 ton Wiley Mdl. F Stiffleg, 60, 80 or 100' boom; rated with 60' boom 30 ton @ 38' or 15 ton @ 57'.

PUMPS

8" Mdl. 125 Gorman Rupp, 6 cyl. Hercules gas eng, 2300 TPM @ 20' to 600 GPM @ 110'. Self-priming, 4 steel wheels.

Hundreds of pumps available for rent or sale.

AIR COMPRESSORS, PORTABLE, DIESEL

NEW Chgo. Pneumatic 315 cu. ft. Diesel Air Compressor, 4 spring suspended pneu. tires, sacrifice at $6,900 f.o.b. Chicago.

100 Compressors, electric, Diesel and gasoline, ranging from 60 to 600 cu. ft., for rent or sale.

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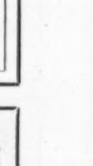

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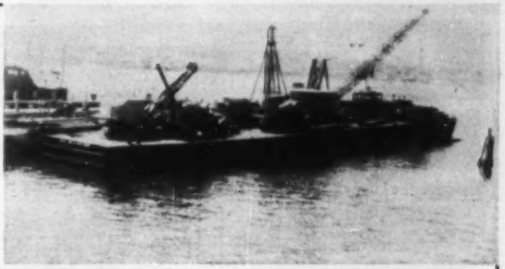

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EDITORIALS

Planning for Helicopters

A LIVELY DISCUSSION is going on between the operators and the manufacturers of helicopters as to whether landing facilities—heliports as they are coming to be called—should be definitely planned for now or wait on the future development of these useful flying machines. The operators, represented by the helicopter group in the International Air Transport Association, say plan now. The Helicopter Council of the Aircraft Industries Association says wait until more is known about the size and operating characteristics of these rotary-wing aircraft.

The operators, in our opinion, have the better argument. It was possible in the case of airports to permit the airplane to influence their location and size, since these could be varied over a wide range. Heliports, to be useful, must be in or near the center of cities. Also, because of this location, a rather definite limit is placed on their size. Under such circumstances it is the design of the machine that must be fitted to the heliport, not vice versa. There may be a place for large freight-carrying helicopters that can use outlying fields, but that is another question.

The aircraft people say that it would be a mistake to freeze the design of heliports on the basis of present knowledge of the machines. But this is no more than the kind of logic that should be applied to the problem at almost any stage. A lot can be done before detail designs are irretrievably set.

In this connection it seems providential that new interest is just now being generated in slum clearance as a result of the new federal urban renewal legislation. The open areas, many right in the hearts of cities, which would result from slum clearance would be potential sites for heliports. Now, therefore, is the time to plan for them.

It is not as if the helicopter were still a dream-form of transportation. Already in this country we have a few examples of both intracity and intercity movement of freight by helicopter, and there have been some experiments with and some actual operation of passenger service. One such service, for example, operates regular scheduled passenger flights among New York's three widely scattered major airports.

Abroad, the development has progressed even farther, notably in the case of Sabena Belgian Airlines which operates regular helicopter passenger runs touching such cities as Brussels, Antwerp, Liege, Rotterdam, Cologne and Bonn. A recent report says that 30,000 passengers have been carried by Sabena in seven-seat copters during the past year. Another contains the news that Sabena has ordered several two-engine helicopters that will carry 40 passengers. Significantly, the machines are U.S.-made, by Sikorsky.

Some guesswork is still necessary as to heliport requirements, but a surprising amount of information firm enough for planning purposes is available. Strangely enough, some of the best of this was advanced by a member of the aircraft manufacturers' Helicopter Council, John P. W. Vest of the Sikorsky Company, in a paper at the ASCE convention a year ago.

One basic heliport requirement is a suitable access path, which for safety and clearance reasons, should be over a river, along railroad rights-of-way or over parks or parkways. The area required for a heliport is still somewhat problematical, although more area than necessary for vertical takeoffs and landings is definitely needed for safe and economical operation of helicopters, which should have about 500 ft of horizontal flight available to them to take off efficiently. If this amount of space plus that needed for service facilities is too great for a ground level heliport, a structure will have to be considered with the landing field on the roof and service facilities on the floors below. Loads to be designed for would be those of 50- to 60-passenger ships which would weigh in the neighborhood of 45,000 lb.

In any event, with data of such nature available and more being developed here and abroad, heliport planning should not be relegated to some distant future time. The problems many cities have with poorly located railway and bus terminals should not be duplicated for this new form of transportation, if they can be avoided.

Help for Engineering Schools

ANNOUNCEMENT that the General Electric Company will match dollar for dollar up to $1,000 the gifts that its employees make to the colleges from which they graduated will be welcome news for the engineering schools of this country in view of the large number of engineers employed by GE. In recent years all college operating costs have risen rapidly, but engineering school costs have gone up faster than the average. Consequently, their needs are greatest.

The directors of many corporations have recognized the growing need of colleges for more funds to meet their mounting operating costs, but they have found great difficulty in developing plans for giving such aid that are practical and yet avoid appearing to favor one school over another. Some have set up scholarships for children of employees, others make regular contributions to schools from which they employ graduates, etc., but none of these is completely satisfactory. The GE plan seems to offer one way around this dilemma. Also, it has the added advantage of stimulating larger gifts from individual alumni, thus adding to the gifts going to the colleges and spreading the load. If widely followed by other companies, the plan started by GE could add very materially to the income colleges now get from their alumni organizations.

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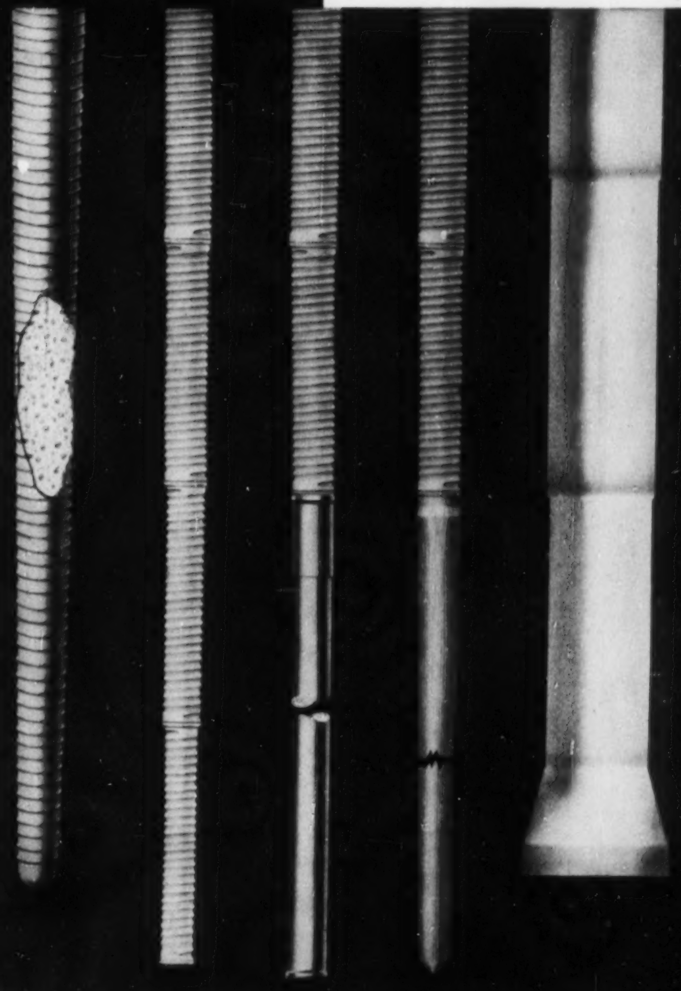

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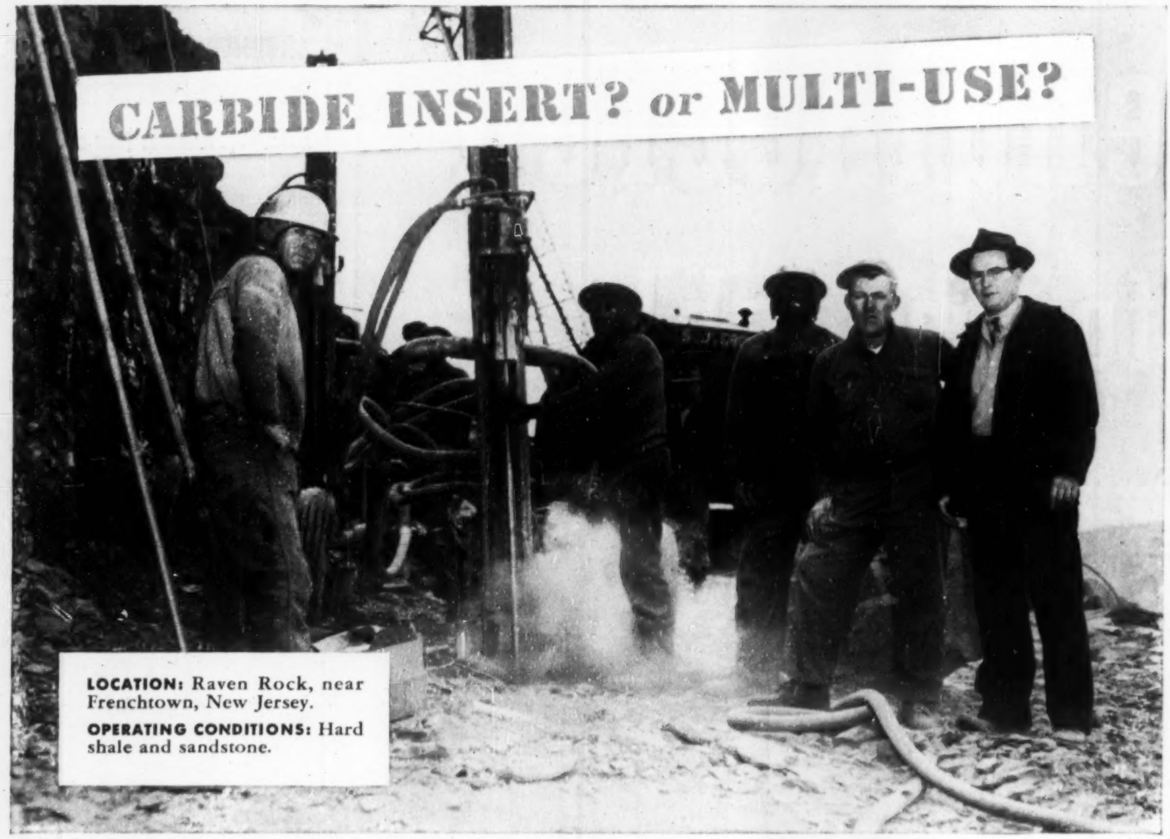

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